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Fall Buying Number

Journal of Electricity

25 Cents a Copy

October 15, 1924

San Francisco

Good Buying is Half the Selling

The Johnson Impeller Washer **satisfies** the customer when she first sees it—and ever after. Its thorough Impeller washing action—**attractive** appearance—and simple mechanical details make an instant hit with the housewife—**and** reduce service costs to the zero point.

The Johnson Franchise is Valuable

It **may** be open in your district. Write or wire us today for details.

The JOHNSON Impeller WASHER

Impelling Sales Features

Water Heater
Washing Ability
Simplicity
Compactness
Easy to Clean.

Johnson Washer Co.
Oakland, California

1924 convention of Northern California Johnson Washer dealers—every one a real Johnson booster. "Wear a smile on wash day" has been a slogan of the Johnson Washer for a long time, but Johnson dealers wear smiles every day. Will you be in the next picture?

CALIFORNIA WEATHERPROOF WIRE

CALIFORNIA WIRE

The founders of the California Wire Company have had varied and extensive experience in the manufacture of weatherproof wire. You reap the benefit of their combined experience when you purchase California Weatherproof Wire, a product of highest quality with which it pays to get acquainted.

Manufactured by

CALIFORNIA WIRE COMPANY

Orange, California

BAKER-JOSLYN COMPANY

Distributers

Electrical Equipment & Construction Materials

330-32 *Azusa St.*
LOS ANGELES

Second & Bryant Sts.
SAN FRANCISCO

2424-28 *First Ave. So.*
SEATTLE

Journal of Electricity entered as second class matter February 17, 1921, at the post office at San Francisco, under the Act of Congress, March 3, 1879.
Published the 1st and 15th of each month, at 883 Mission Street, San Francisco, California.

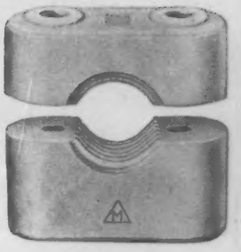
MACOMB

STANDARD PORCELAIN

TUBES

KNOBS

CLEATS



INSULATORS

"BULL DOG"

Assembled

Split Knob

MANUFACTURED BY

ILLINOIS ELECTRIC PORCELAIN CO.

MACOMB, ILLINOIS

Pacific Coast Stocks Carried By

BAKER-JOSLYN COMPANY

Distributers

Electrical Equipment & Construction Materials

330-32 *Azusa St.* LOS ANGELES

Second & Bryant Sts. SAN FRANCISCO

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ROCKBESTOS

—the asbestos covered wire

Wherever heat is excessive!

And wiring is used, Rockbestos is the ideal wire. In motors, boiler rooms, foundries, on grids, arc lights, transformer leads; ROCKBESTOS—the asbestos covered wire will meet every requirement. It will stand excessive heat and never deteriorates.

The Haughton Elevator and Machine Co., use Rockbestos in wiring to the resistance grids of controller panels. Years of experience with Rockbestos find them perfectly satisfied with its performance.

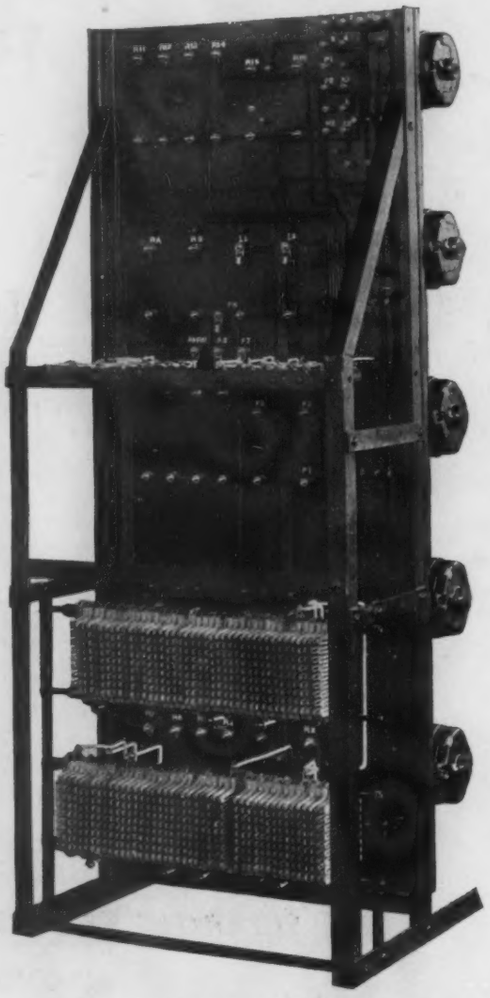
What is your problem? Rockbestos engineers will be glad to help you.

Heater cord
Heating elements
Magnet wire
Motion Picture Cable
Stove wire

—

MANUFACTURED BY

Rockbestos Products Corporation
NEW HAVEN CONN.



Haughton Elevator and Machine Co.'s Controller Panel Wired with Rockbestos

BAKER-JOSLYN COMPANY

Distributers

Electrical Equipment & Construction Materials

330-32 *Azusa St.* LOS ANGELES

Second & Bryant Sts. SAN FRANCISCO

2424-28 *First Ave. So.* SEATTLE

plus Pacific States Service

There are three factors which usually insure satisfaction in the purchase of any commodity.

1. Unquestioned high quality of the product.
2. Prompt and reliable delivery.
3. Friendly and intelligent cooperation on the part of the local sales representatives.

From the standpoint of Pacific Coast purchasers of copper wire, the Anaconda Copper Mining Company fills the first two requirements. Anaconda copper wire is 99.9% pure. The strategic geographical location of the Anaconda plant, coupled with the unexcelled shipping facilities insures prompt and reliable shipments to Pacific Coast points.

As Anaconda distributor for the Pacific Coast, the Pacific States Electric Company offers an intelligent understanding of the customers' requirements and a ready desire to cooperate in any way to insure satisfactory service.

ANACONDA COPPER MINING COMPANY
THE AMERICAN BRASS COMPANY

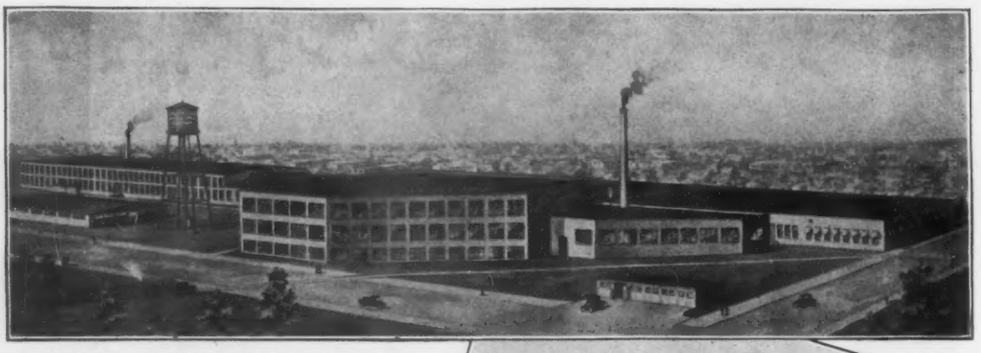
Rod, Wire and Cable Products

General Sales Office 25 Broadway, New York
Western Sales Office 111 W. Washington St., Chicago

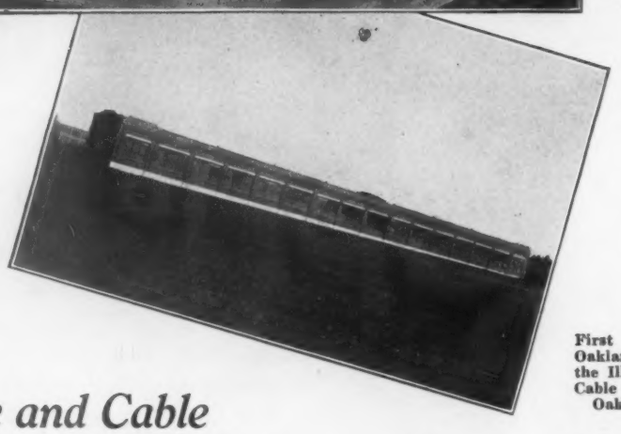
PACIFIC STATES
ELECTRIC COMPANY

SAN FRANCISCO LOS ANGELES OAKLAND PORTLAND SEATTLE SPOKANE

Distributors for the Pacific Coast



The Sycamore plant of the Illinois Wire & Cable Company at Sycamore, Illinois.



First Unit of the Oakland plant of the Illinois Wire & Cable Company at Oakland, Calif.

ILLINOIS WIRE OAKLAND MILLS

Illinois Weatherproof Wire and Cable Distributed on the Coast by the Pacific States Electric Company

Illinois weatherproof wire and cable will be sold under the "Check" Seal and distributed on the Pacific Coast by the Pacific States Electric Company.

Local stocks will be maintained at all Pacific States Electric Company warehouses and reliable distribution service assured by this fact.

This combination of Illinois Wire and Cable local manufacturing facilities with "Check" Seal service insures customers the essentials for complete satisfaction—quality products plus absolute dependable service.

ILLINOIS WIRE AND CABLE CO.

Oakland, California

PACIFIC STATES ELECTRIC COMPANY

SAN FRANCISCO LOS ANGELES OAKLAND PORTLAND SEATTLE SPOKANE

Distributors for the Pacific Coast

Hubbard Hardware

Double-Dip Hot Galvanizing Explained

Cleaning

The articles to be galvanized must first be cleaned of all surface scale, rust and other foreign matter. This is done by pickling the articles in a weak solution of sulphuric acid, or they may be cleaned by tumbling or sand blasting.

The Galvanizing Process

After the articles have been cleaned, they are treated with a muriatic acid flux and then dipped in the melted zinc. This zinc is kept at a uniform temperature, which is predetermined according to the size and nature of the articles to be galvanized. The articles are allowed to remain in this zinc until they have reached the same temperature as the molten metal. They are then withdrawn, given a salammoniac flux treatment and re-immersed in the metal. The surface of the metal is then skimmed back clean, the articles removed; given a vigorous shaking or tumbling to remove the excess spelter, and allowed to cool.

The Coating

A study of the coating put on by the hot-dip process shows that it consists of two parts. An outside coating of pure zinc and a layer of zinc-iron alloy, formed by the action of the hot zinc in contact with the iron. The thickness of this zinc-iron alloy and the density of the zinc coating absolutely determine the rust resisting qualities or the life of the coating. And, the bond between the zinc and iron is also governed by the thickness of the zinc-iron alloy, the thicker the alloy, the more firmly the zinc adheres to the iron. Further scientific research has established the principle that the longer the articles remain in contact with the molten zinc, the thicker the alloy formed.

Advantages of the Double-Dip

Since the protective qualities of the coating depend on the density of the coating and the thickness of the zinc-iron alloy, it will be seen that the double-dip process provides both these essential qualities. The action of the second flux, a dry powder, when thrown against the hot articles causes an action which brings to the surface small particles of foreign matter and causes the zinc to flow freely, completely sealing all pores, covering all bare spots, and making a dense non-porous coating. As the articles are given a second dip, the foreign particles brought to the surface are carried away and the thickness of the zinc-iron alloy is increased in proportion to the additional length of time required for the double-dip.

From a scientific standpoint the added value of the double-dip is apparent. From the practical side, twenty years' service on the line is added proof of this process, which has been practiced by Hubbard & Company since entering the line material field, and has had no small part in building up the reputation of Hubbard quality. As long as the only claim for single-dip galvanizing is lower cost, Hubbard & Company will continue its rigid, unvarying use of the double-dip hot process.

HUBBARD & COMPANY

Pittsburgh, Pa.

"Check" Seal

PACIFIC STATES ELECTRIC COMPANY

SAN FRANCISCO, LOS ANGELES, OAKLAND, PORTLAND, SEATTLE, SPOKANE

"Check" Seal

Distributors for the Pacific Coast

ANNOUNCEMENT

With the best interests of our customers in view, the "Three E" Company announces a new representation to cover the entire Pacific Coast.

Clapp & LaMoree, our Los Angeles representatives, have expanded their organization and now have offices in San Francisco, California and in Portland, Oregon. They will also, as soon as arrangements can be made, open an office in Seattle, Washington.

This means that with four offices on the coast, our customers will be assured of prompt and efficient attention to their wants and a service heretofore not obtainable through lack of complete representation.

Write to the nearest office and let them get acquainted with you; tell them your high tension switching and protective requirements and you will be agreeably surprised with their prompt attention.

Equipment and service for the customers' best advantage is our aim and this is another step toward that end.

ELECTRICAL ENGINEERS EQUIPMENT CO.
General Offices: 710 W. Madison St., Chicago, Ill.

Address

Clapp & LaMoree

at the office nearest you

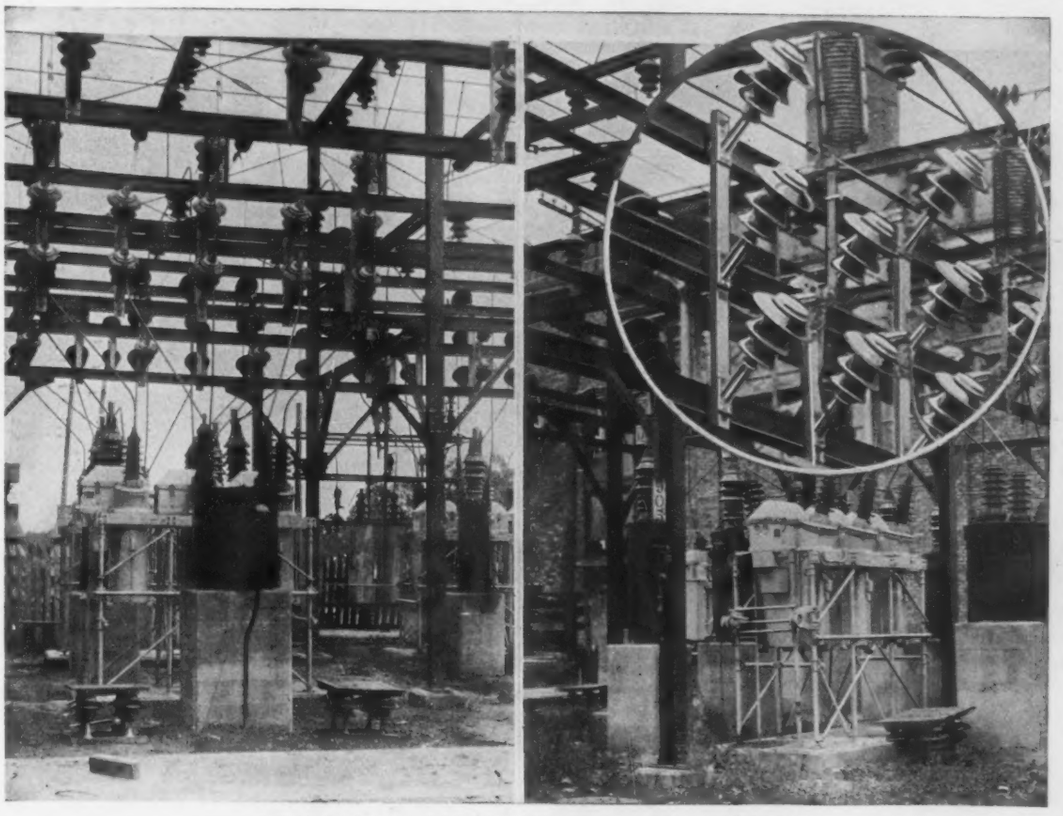
310 E. Fourth St., Los Angeles, Calif.	Electric Bldg., San Francisco, Calif.	Commonwealth Bldg., Portland, Ore.	Seattle, Wash. (address to be announced later)

"THREE E"
HIGH QUALITY
LINE AND STATION EQUIPMENT

THE STANDARD OF COMPARISON

The Delta Star

UNIT TYPE



A "CLOSE-UP" OF DELTA-STAR UNIT TYPE EQUIPMENT

Speaking of **Standards,** the insulators and parts used in this substation assembly are interchangeable with those shipped in 1914.

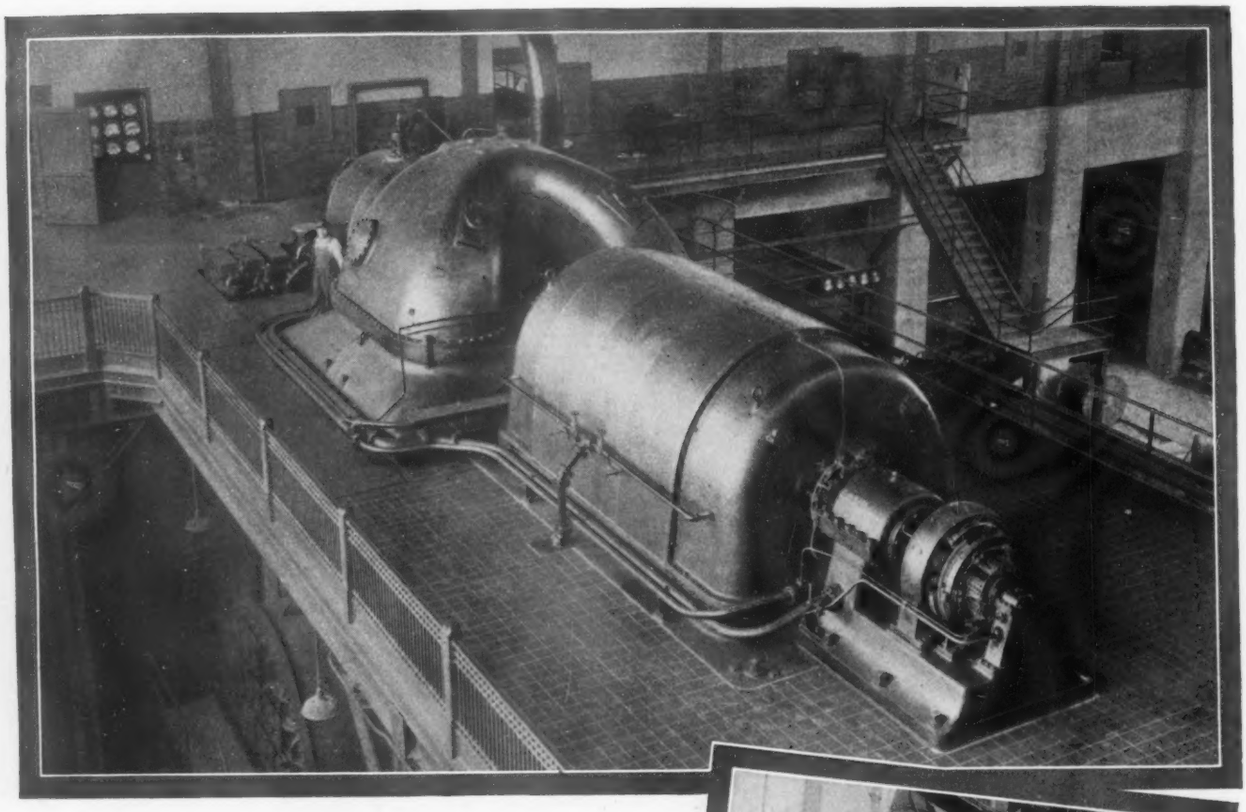
Improvements have been made since 1914—but we never forget to maintain interchangeability.

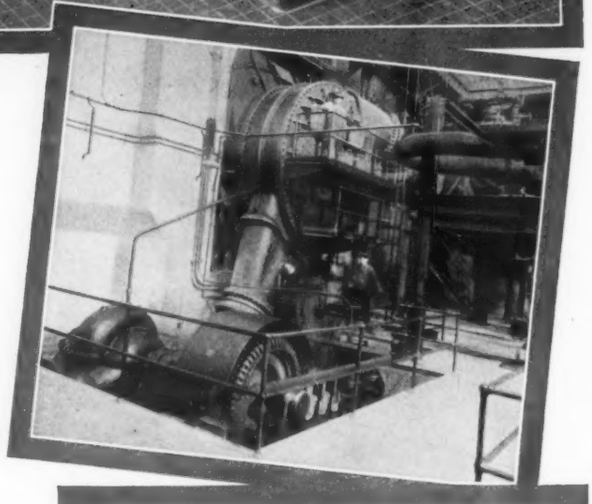
DELTA-STAR ELECTRIC CO.

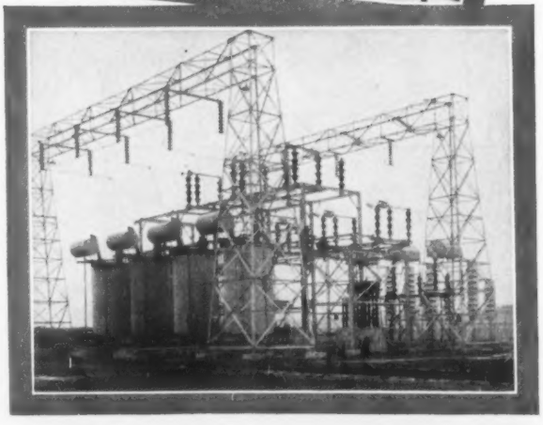
2400 Block Fulton St Chicago, Illinois

Albany, N. Y., 715 City Savings Bank Bldg.
Birmingham, Ala., 827-830 Brown-Marx Bldg.
Boston, Mass., 294 Washington St.
Buffalo, N. Y., 595 Ellicott Square
Columbus, Ohio, 600 Joyce Realty Bldg.
Detroit, Mich., 708 Ford Bldg.
Indianapolis, 518 Trac. Term. Bldg.
Kansas City, Mo., 301-2 Dwight Bldg.
Knoxville, Tenn., Holston Nat'l Bk. Bldg.
Los Angeles, Calif., I. W. Hellman Bldg.
Minneapolis, Minn., 940 Security Bldg.
New York, N. Y., 25 Broad St.
Orlando, Fla., Cornell-Mathews Co.
Philadelphia, Pa., 1333 Real Estate Trust
Pittsburgh, Pa., 934 Union Trust Bldg.
Rochester, N. Y., 119 Main St., E.
Salt Lake, Utah, 313 Dooly Bldg.
San Francisco, Calif., 193 Second St.
Seattle, Wash., Hoge Bldg.
St. Louis, Mo., Railway Exchange
Syracuse, N. Y., City Bank Bldg.
Toronto, Ont., 213-219 Sterling Rd.
Berthon & Touzot, 40 Rue de Aguisseau, Boulogne-sur-Seine, France
Carrick, Wedderspoon, Ltd., Christchurch, New Zealand
A/S Kraftoverforing Kristiania, Norway
Allenwest, S. A., Ltd., City House, Johannesburg, So. Africa
Allied Engineering Ltd., Sydney, Australia

UNIT TYPE CEMENTED SWITCH INSULATORS







ALLIS-CHALMERS MANUFACTURING COMPANY

having greatly extended and improved its manufacturing facilities for steam turbine units, particularly of the larger sizes, is now building these units in any commercial size.

The placing in regular service several months ago of the 20,000 K.W., 80% P.F. unit for the Public Service Company of Northern Illinois, as illustrated herewith, will be followed by a 30,000 K.W. unit now building for the same station.

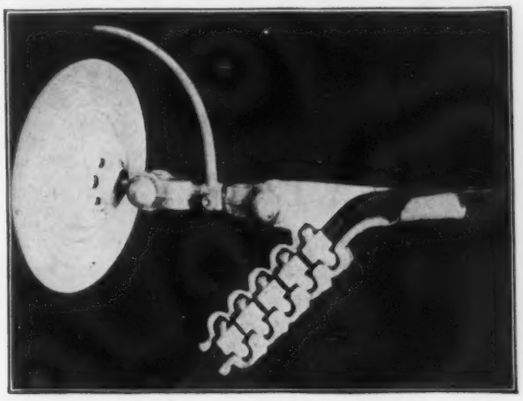
Units ranging in capacity from 20,000 K.W. to 30,000 K.W. are now under construction in the Allis-Chalmers plant.

In its more than sixty years of service Allis-Chalmers and its predecessor organizations have successfully built more than eleven million horsepower in steam power equipment.

This organization is at your service in any problem of power equipment.

ALLIS-CHALMERS

MILWAUKEE, WIS. U.S.A.



S-400 Strain Clamp with Horn

C-200 Suspension Clamp with Horn

FORGED STEEL CLAMPS

INSURE UNIFORM QUALITY
AND LONG SERVICE

A JEFFERY-DEWITT PRODUCT

WRITE FOR OUR SPECIAL BULLETIN OF COMPLETE DATA AND PRICES IF YOU ARE INTERESTED IN A
SUPERIOR QUALITY CLAMP

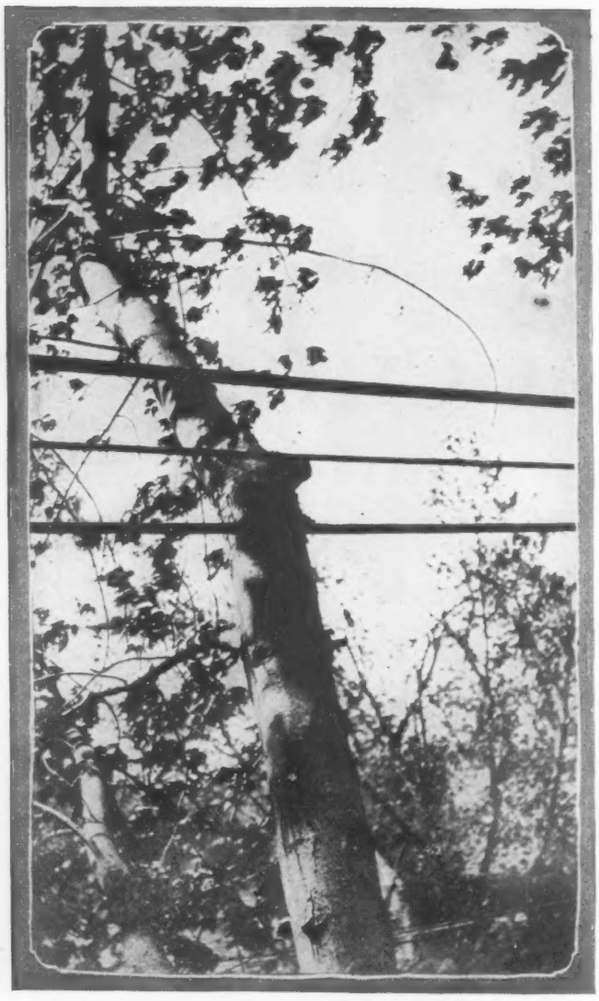
Jeffery-Dewitt Insulator Co.
Kenova, W. Va.

Pacific Coast Representatives:
Garland Affolter Engineering Corporation
Seattle - San Francisco - Los Angeles

Sales Offices in all Principal Cities

JEFFERY-DEWITT INSULATOR CO. KENOVA, W.VA. U.S.A.

Overhead or U
The Central Sta t



FIBREX

Wind, like time is eternal. Down through the centuries, it has been used by mariners, and understood by geologists, scientists and geographers. The action of wind, however, and its effect on the wear of wire, has been recognized only during the past two decades. The constant rub, rub, rub of wire against the limbs of trees is a constant menace. Dead grounds, short circuits and swinging grounds result. Just as wind is the cause of wear on wire, Fibrex tree wire is the solution. Fibrex tree wire is a rubber-insulated copper conductor, protected by a layer of tape, a serving of tarred jute, non-metallic Fibrex armor and a wear-resisting weather-proof braid. This non-metallic armor wears like steel tape—yet has none of its disadvantages.

A 13-Year Record for Fibrex

Fibrex was designed in 1910. The first length of Fibrex ever manufactured was installed early in 1911. After thirteen years of exposure to all kinds of weather, it is still in service. Fibrex has stood the test of time.

The Proof of Fibrex

Scientific analysis of the cause of wear and this specially prepared wire Fibrex is the Simplex Wire & Cable Co's contribution to the electrical industry on this problem. By creating the conditions of wear in our laboratory, we tested No. 6 solid covered with weatherproof braids of 14/2 cotton and found that it lasted through 43,600 abrasions. Fibrex under the same conditions, withstood 1,500,000 abrasions. This indicates that Fibrex will last 35 times longer than No. 6 weatherproof under test conditions.

Every coil of 3000 volt Fibrex is tested for 7500 volts for 5 minutes after soaking 12 hours in water. This test is your assurance that your line men may handle the wire in wet weather with absolute safety.

Fibrex tree wire has been tested and proved. It is made for all commercial voltages. Get a sample and examine it. Sent promptly on request.

Simplex Wire and
Since 1885 we have made insu
201 Devonshire St.,

Underground
tion Problem

CONDEX

solves the central station distribution problem underground wherever park cable is required. It is ideal on series lighting circuits for municipal street lighting, white way installations, and for park or playground illuminating systems.

It has two advantages over any other cable now manufactured. (1) It is stronger and will stand any pressure that is liable to be placed upon it without spreading. (2) It gives complete coverage. Bend a piece of Condex and you do not spread the steel armor.

The flexible, locked steel conduit is a steel tape applied spirally, around the lead-covered conductor. This steel armor and the unique way in which it is applied form the main distinguishing feature of CONDEX Park Cable. Conduits are unnecessary; manholes need not be constructed and very little digging is required to obtain a satisfactory installation. It can be laid in a shallow trench in the ground, where it is feasible to dig such a trench, or it can be placed under the pavement of a city street by simply removing one course of paving blocks and placing the cable in the bedding under them.

Because of the new arch construction, Condex has many advantages over any other park cable. Condex is stronger. It has complete coverage. Condex is smaller in diameter and lighter in weight, size for size, than any other park cable. It is easier to handle, there is more cable on a reel, it requires less labor to handle the same amount of cable, it costs less to ship by freight and will last longer than any other Park Cable. These are the facts. We should be pleased to have an opportunity of proving them to you.

Coverage

Here is unquestionable proof of complete coverage of Condex Park Cable. This piece of 1-in. diameter Condex was stripped of its outside covering and hammered into a circular form with an average diameter of 3¾ in., an almost unbelievable feat.

Interlocking

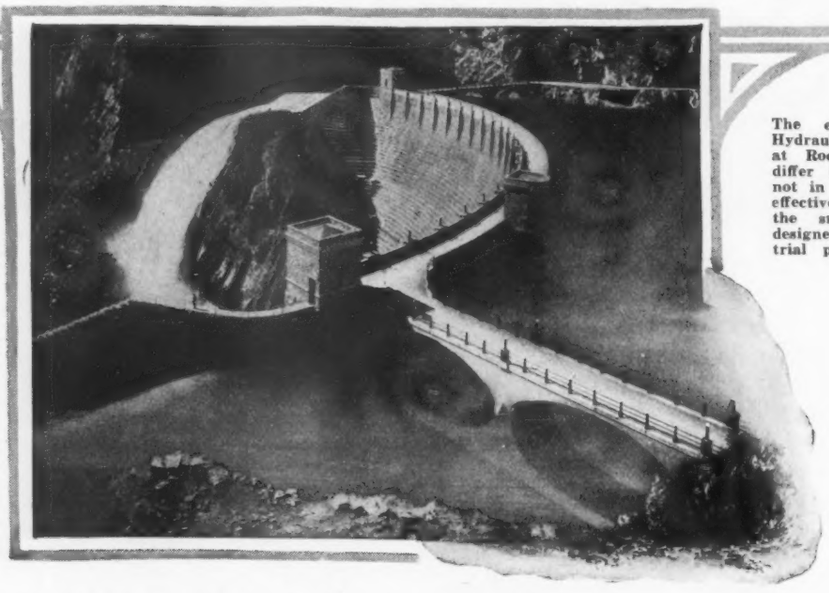
This piece of Condex was stripped and then hammered into this form. The cable withstood many heavy blows, which failed to break down or to destroy the interlocking.

Arch Construction

is the strongest possible. This is proved by the fact that arches built centuries ago such as this Saghir arch at Palestine, are still in use.

Cable Company
lated wire for electrical purposes
Boston, Mass.

WHITE COAL IS CHEAP



The eight Smith Hydraulic Turbines at Roosevelt Dam differ in size, but not in principle of effectiveness, from the smaller sizes designed for industrial plants.

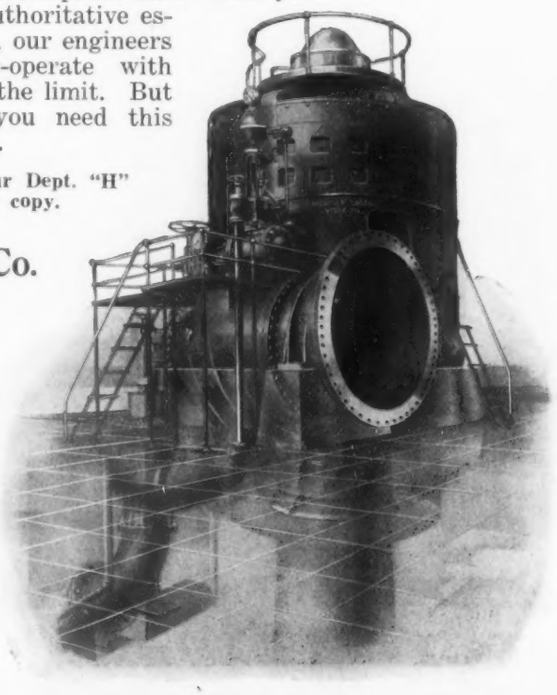
Even the smaller plant frequently reports astonishing success with water-power

Is there an untamed stream somewhere near your plant? Now is the time to investigate its possibilities. As coal rises in cost, and at the same time becomes poorer in quality and uncertain in supply, **White** Coal—water power—offers a great hope.

Even small plants are applying water power to their needs with S. Morgan Smith Turbines. Not only do they save money, but their power supply no longer lies in uncertain outside control. Unaffected by outside conditions, Nature's stream rushes on, providing constant, economical power.

This, above all else, is the one vital question that commands the attention of every forward-looking power plant engineer and executive. To aid you in a preliminary survey, we have prepared a bulletin of designs which points out the vital factors in the use of water power. You will find it an invaluable guide in estimating what a correct water turbine installation should accomplish. Later when you want authoritative estimates, our engineers will co-operate with you to the limit. But today you need this bulletin.

Write our Dept. "H" for your copy.



S. Morgan Smith Co.
York, Pa.

S. Morgan Smith Hydraulic Turbines

33 years of satisfactorily meeting transformer needs *just like yours*

Wagner Electric Corporation
6400 Plymouth Avenue, St. Louis, Missouri

Wagner, Quality Transformers
distribution and power types in a wide range of styles and sizes

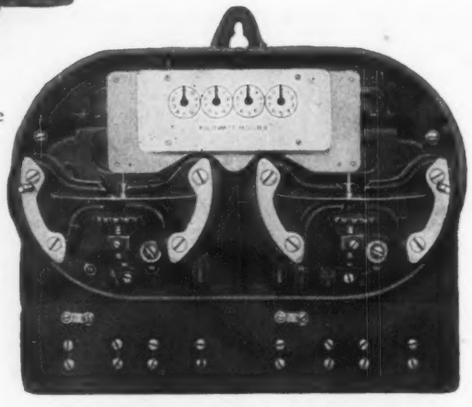
10620-13

Meter Parts Standardization

Type H Single-phase
Watthour Meter

Type H Vertical Polyphase
Watthour Meter

SANGAMO



Type H Horizontal Polyphase Watthour Meter

All alike — — single and polyphase

YEARS ago, when the first Type H Meter was made, the Sangamo Electric Company appreciated the advantages of standardized construction. It is interesting to know that every improvement in the present meter can be incorporated in all the meters that have been made in the past ten years.

Now, with the advent of the new Horizontal-type Polyphase Meter and the slightly changed Vertical-type Polyphase Meter, the Sangamo Electric Company can claim the distinction of being the first manufacturer to standardize all alternating-current service-type meters.

The horizontal polyphase meter consists of two standard single-phase elements mounted side by side and geared to a special register. The vertical polyphase meter consists of two standard single-phase elements with slightly modified return plates having torque balancing levers and operating a single shaft. All parts, with a very few exceptions, are therefore interchangeable in all three types of meters.

Eliminate the need for a large stock of widely diversified spare parts, simplify the work of the meter department and reduce maintenance costs by standardizing on Sangamo Meters—all alike, both single and polyphase (vertical and horizontal).

Bulletin 67 which describes the complete line of Sangamo Type H Meters will be gladly sent upon request.

SANGAMO ELECTRIC COMPANY

Springfield, Illinois

New York Chicago Birmingham San Francisco Los Angeles

SANGAMO METERS

FOR EVERY ELECTRICAL NEED

6420-6

Get Ready Now For *CHRISTMAS HOLIDAY BUSINESS!*

We're telling them *why*- they should buy them!

You tell them Where!

MAJESTIC
Electric Heater

MAJESTIC
Hot Cake & Waffle Iron

The advertising of Majestic Electric Heaters and Majestic Hot-cake and Waffle Irons is appearing in the leading daily papers—educating your customers to the **exceptional values** they represent.

Dealers report a greatly increased demand. You can get your share of this new business—if you will.

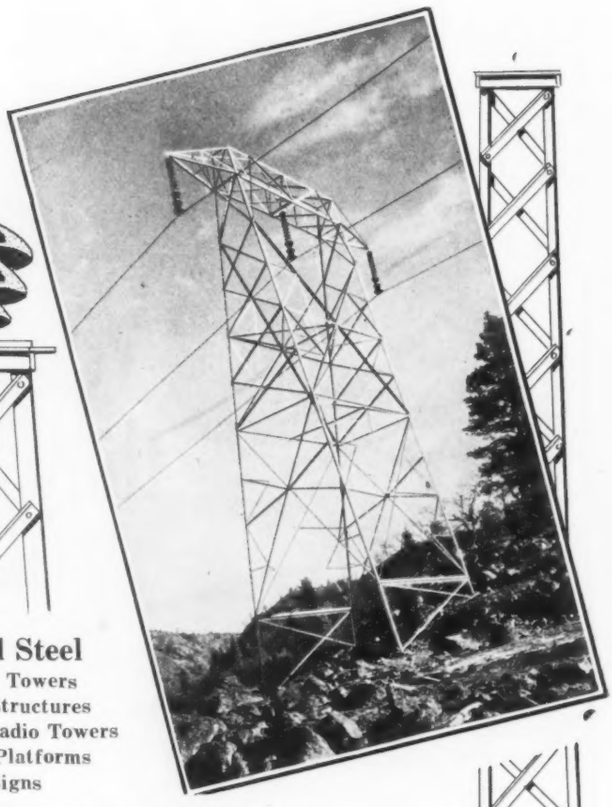
Clip the advertisements that appear—display them with the merchandise in your windows. We tell them **why** to buy. You tell them **where.**

If you are not stocked, order now. Immediate deliveries in any quantity.

Majestic Electric Appliance Co.

Incorporated

San Francisco **Kansas City**



Galvanized Steel

Transmission Towers
Poles Bus Structures
Switch Racks Radio Towers
Transformer Platforms
Electric Signs

Built exclusively with *Special Tower Steel.*

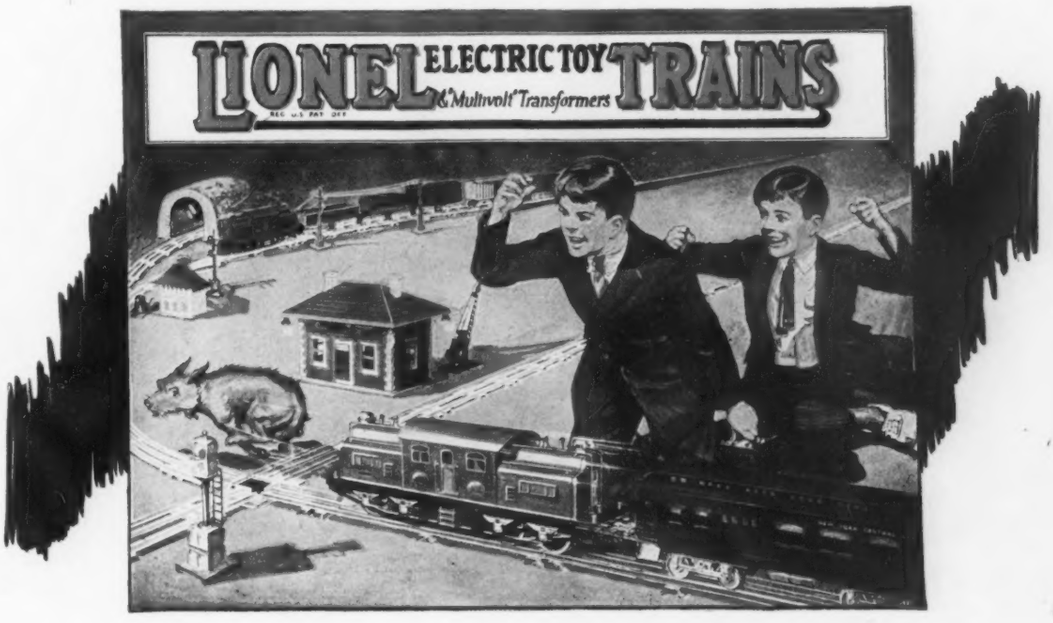
PACIFIC COAST STEEL COMPANY

General Office: Rialto Bldg., San Francisco
Plants: San Francisco, Portland, Seattle

Special Tower Steel

is the product of this Company. It is a tough, ductile, High Elastic Limit Steel which makes possible lighter structures without a reduction in strength.

Available for other structures



This is the Cover

of the catalog that is sending thousands of boys and their parents to the stores of Lionel Dealers. Be sure you are ready to cash in on your share of the business it is creating.

Supreme Lionel Quality plus the lowest prices in Lionel History will "cinch" the sales for you.

Complete Outfits to retail from **$5.75** upward that show the retailer a handsome profit.

Write at once for dealer's proposition and your copy of the Lionel Catalog.

The LIONEL CORPORATION

Entire 6th Floor

48-52 E. 21st St., New York City

Western Coast Representative:

M. Sweyd, 180 New Montgomery St., San Francisco, Cal.

LIONEL ELECTRIC TOY TRAINS
& Multivolt Transformers

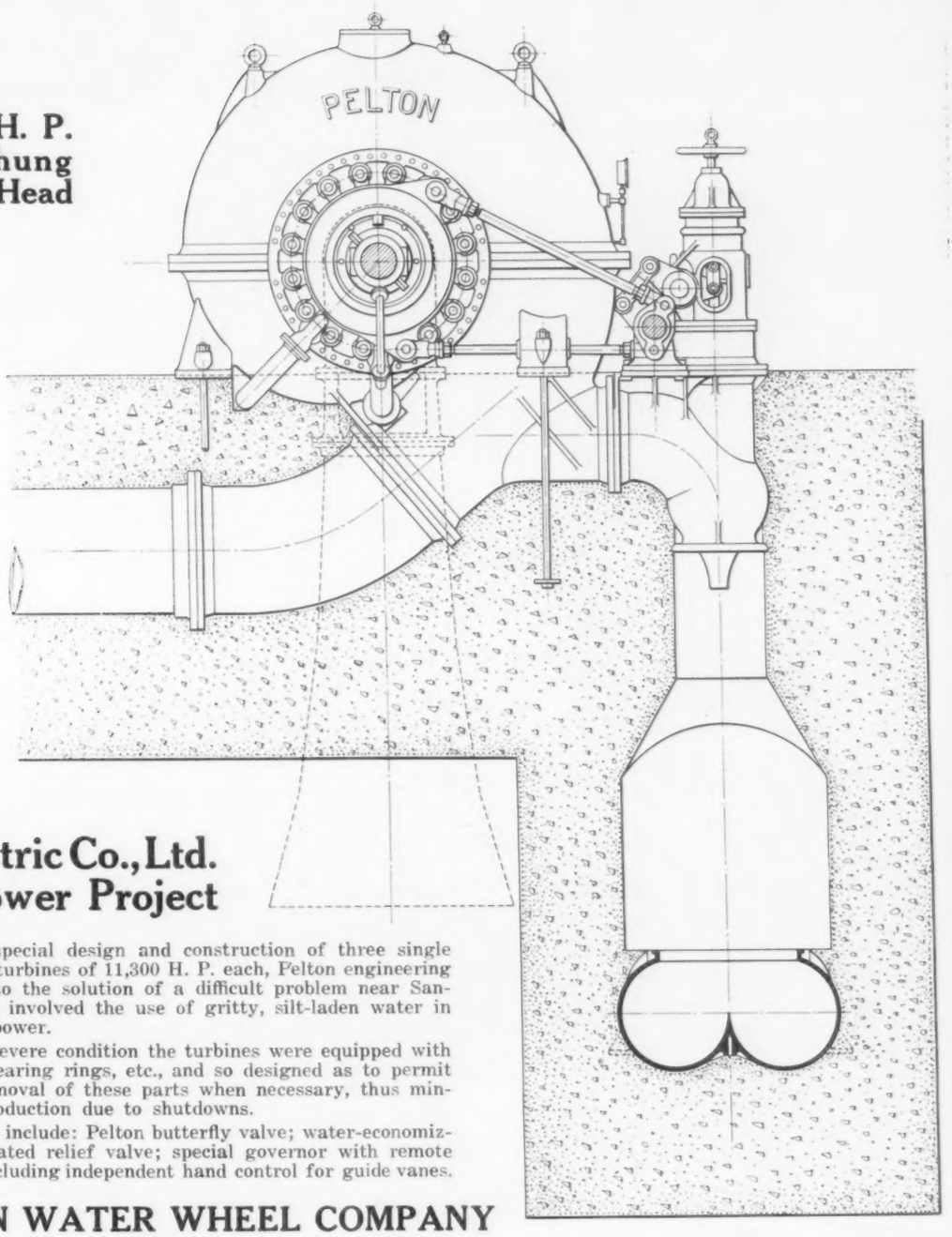
Nakatsugawa
This is the recently completed Nakatsugawa No. 1 Plant of the Shinyetsu Electric Power Co., Japan. This installation consists of three lines of pipe 60-in. to 34-in. in diameter and ranging in thickness from ⅜-in. to 1-5/16-in. The working head is 1409-ft. Kellogg forged welded pipe with bump joints and erection joints are used throughout.
Just another indication of what is meant by the statement—Kellogg Forge Welded Pipe lines are found the world over.
M. W. KELLOGG CO.
140 Cedar St., NEW YORK CITY
Main Office and Works: JERSEY CITY, N. J.

KELLOGG
FORGE WELDED PIPE
FORGE WELDED CONTAINERS
POWER PLANT PIPING

PELTON

Overhung Turbines in Chile Plant

Three 11,300 H. P. Single - Overhung Units—580 ft. Head



Chilean Electric Co., Ltd. Develops Power Project

Through the special design and construction of three single overhung reaction turbines of 11,300 H. P. each, Pelton engineering contributed much to the solution of a difficult problem near Santiago, Chile, which involved the use of gritty, silt-laden water in the production of power.

To meet this severe condition the turbines were equipped with special runners, wearing rings, etc., and so designed as to permit quick and easy removal of these parts when necessary, thus minimizing loss of production due to shutdowns.

Other features include: Pelton butterfly valve; water-economizing, governor-operated relief valve; special governor with remote control features, including independent hand control for guide vanes.

THE PELTON WATER WHEEL COMPANY

Hydraulic Engineers

2985 Nineteenth St., SAN FRANCISCO 100 Broadway, NEW YORK

Divisional Office in American Trust Building, Birmingham, Ala.

Associated Companies: Wm. Cramp & Sons Ship & Engine Bldg. Co., Philadelphia; Dominion Engineering Works, Montreal; M. Hilpert & Co., Rio de Janeiro.

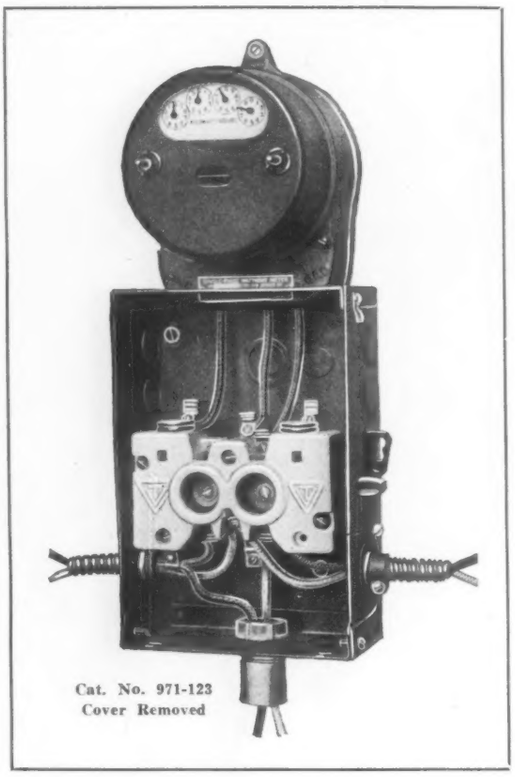
Pacific Coast Representatives: The M. W. Kellogg Co., Jersey City, N. J.; Larner Engineering Co., Philadelphia, Pa.; De La Vergne Machine Co., New York, N. Y.

PELTON

TRUMBULL-VANDERPOEL

STANDARDIZED

UNIVERSAL Meter Service Switches



Cat. No. 971-123
Cover Removed

Branch Circuit Type

This line of switches consists of 30 ampere standardized cabinets, each containing:

A service switch with service fuses. These, together with all main and branch wiring and all meter connections are sealed under the main cover.

A branch circuit block with from one to four branch cutouts. These are accessible to the customer at all times under a small auxiliary cover.

All the advantages of the Standardized Switch Line are retained in these Universal Switches:

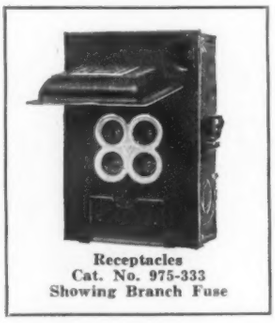
Meter testing facilities.

Banking facilities with clamp type terminals.

Concentric knockouts.

Standardized Box size and End Walls.

Complete Information in Bulletin 26-A. Copy on request.



Receptacles
Cat. No. 975-333
Showing Branch Fuse

THE TRUMBULL-VANDERPOEL ELEC. MFG. CO.
BANTAM, CONNECTICUT

Complete lines of Industrial Safety Switches, Meter Service and Entrance Switches and Open Knife Switches

ALLIED INDUSTRIES, INC., *Pacific Coast Distributors*

COLLYER

SERVICE
on the Pacific Coast
is through

ALLIED INDUSTRIES, INC.

Stocks available at

San Francisco Portland Seattle Los Angeles

Call upon them for

Rubber Covered Wires and Cables
Lamp and Reinforced Cords
Fixture Cords
Genuine and Artificial Silk Cords
Radio Antenna Wire
Weatherproof Wires and Cables
Slow Burning Wires and Cables
Heater Cords
Annunciator and Office Wires

Collyer Insulated Wire Co.
Pawtucket, Rhode Island

HONEST VALUE

For over a third of a century the Packard trade mark has stood for a definite Standard of Quality. As expressed by J. W. Packard at that time—"It is never seen except on goods of honest value."

Time has but strengthened this pioneer spirit of our institution.

The Packard Electric Company

Warren, Ohio

Transformer Manufacturers since 1890

Here are two new additions to the line of Marion Electrical Household Servants

They give you a decided advantage in Range and Heater Sales

The Range

There are four reasons why this range will make real money for you. 1st—The price is right, 2nd—Your profit is greater, 3rd—Quality is proven by absence of service and large numbers of satisfied users, 4th—Embodies features never before found in a range sold at this price.

Make preparations now to sell this range on an extensive basis. Every part of Marion ranges are made in accordance with Underwriters' Laboratory specifications. This number 126 with white top is the range you can put over with greatest all around satisfaction.

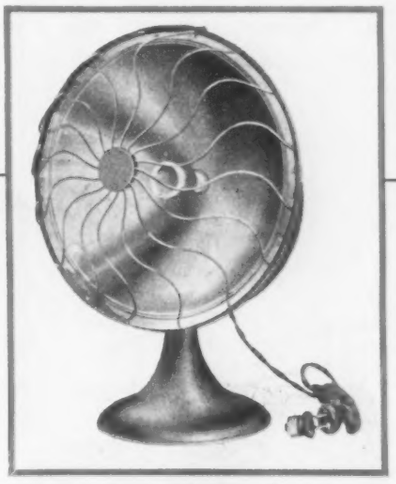
The Marion Chill Chaser

Here's a 100% illuminated bowl. It's the one and only heater having every inch of its bowl illuminated by the heating element. Here's a glowing "bowl of fire" that throws out real heat—all the heat that 660 watts can generate. This new development really demands the attention of jobbers, dealers, and central stations. It'll produce more sales and our simplified system of assembling cuts the possibility of trouble to zero.

No. 126

$97.50 LIST

F.O.B. Marion, Ind.



$9.50 LIST

Successfully Made by

RUTENBER ELECTRIC CO.

Factory and General Offices

Marion, Indiana

Western Representative

A. E. CARROLL

Sharon Bldg., New Montgomery St.
San Francisco, Calif.

We also make the following Marion quality products—Irons, Toasters, Table Stoves, Hot Plates, Ranges, Urn Heaters, Reflective Heaters, Radiant Type Air Heaters.

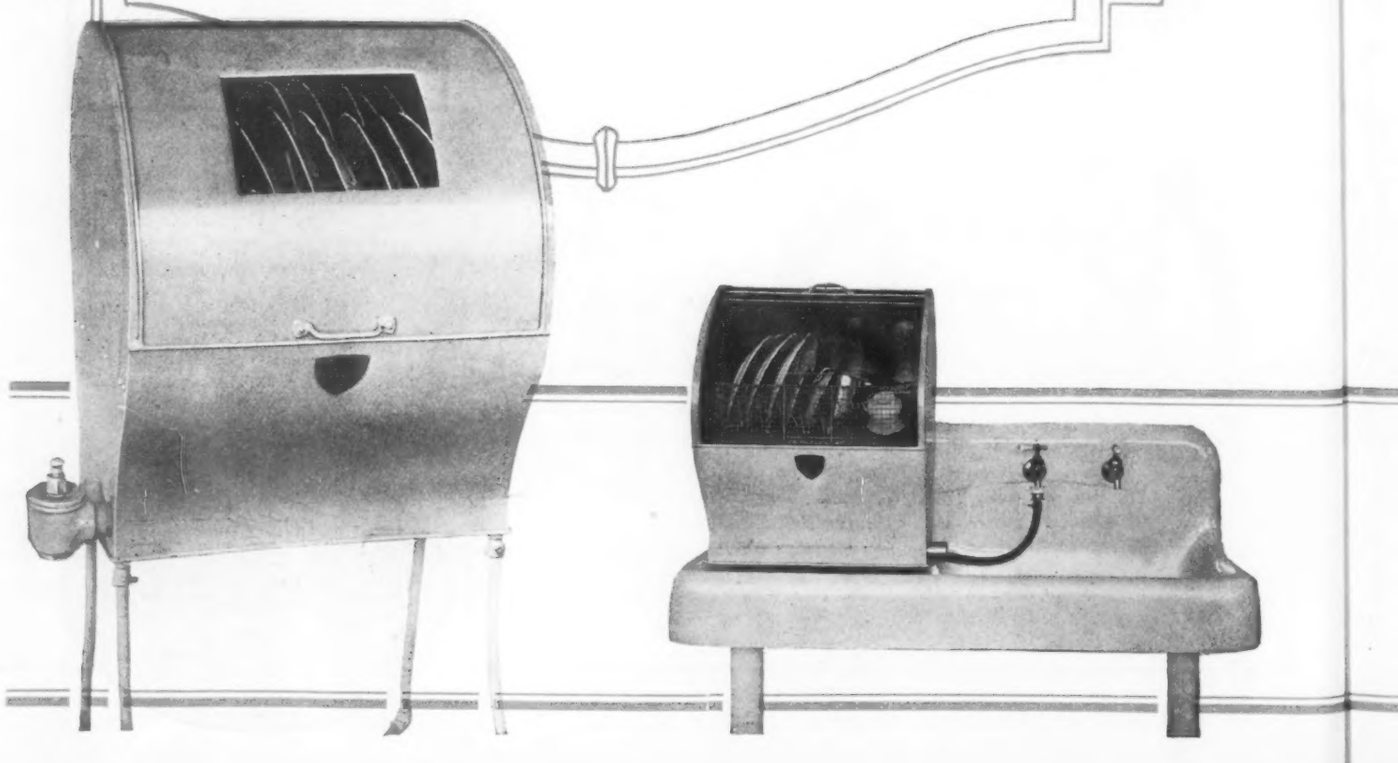
Marion ELECTRIC Household Servants

A 100 % Opportunity

for Central Stations and Dealers

This practical and efficient household dishwasher with an entirely new dish-washing principle will win immediate favor and make possible the rapid development of dishwashing by electricity in the western states. For the central station it means an additional merchandising profit and a desirable load-builder. Dealers will experience unusual sales action with it. The Hydro-lectric makes a demonstration that always receives favorable attention. It has real merit—is neatly designed—made of finest material and is guaranteed. It measures up to all the qualifications a housewife demands of a real dishwasher even after the most critical inspection or most severe usage. Hotels, Restaurants, Hospitals, etc., also are all logical prospects.

Hydro-lectric Dishwasher

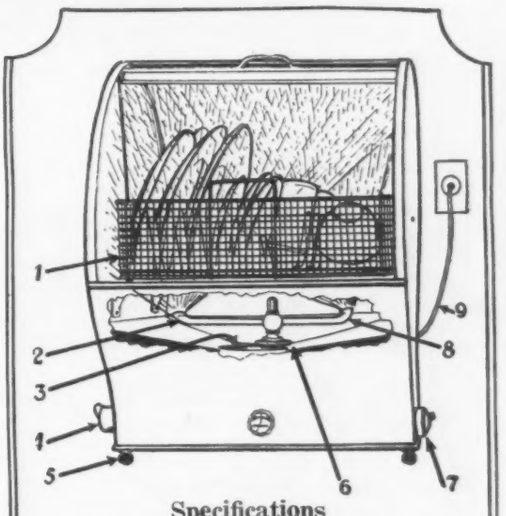


Dishes washed in two minutes. For the housewife—an hour and a half a day for rest or play.

The machine with the new, practical, efficient, dish-washing principle

MANY features are responsible for the great demand for the Hydro-Lectric — for its superiority and effectiveness. No additional plumbing or wiring is required. It is independent of water pressure. Five quarts of water does the work. It completes the work quickly—washes and rinses in two minutes. Has no soaping device to get out of order—just a teaspoonful of any soap can be used. Absolute sanitation is the rule throughout its construction. Being compact it requires little room when not in use. Guaranteed by manufacturer—thoroughly insulated—lubricates itself through soapy water.

Hydro-Electric Manufacturing Co.
Milwaukee, Wisconsin



Specifications

1. Dish Rack—Capacity 30 dishes
2. Spray Arm—Outside wash
3. Drain Bowl and Copper Strainer
4. Water Outlet—Right or left drainboard
5. Adjustable Legs—Fits on any sink—rubber tipped
6. Concave Bottom—Insures quick drain
7. Electric Switch—Starts and stops motor
8. Spray Arm—Center wash
9. Electric cord for light socket or plug

Western Sales Agencies

HYDRO-LECTRIC SALES AGENCY,
A. A. Guilliaum, Mgr.,
Los Angeles, Calif.

SLOAT WHOLESALE CO.,
Portland, Ore.

HYDRO-ELECTRIC MANUFACTURING CO.
HYDRO-LECTRIC
PAT. PEND.
DISHWASHER
MILWAUKEE, WISCONSIN

No Power Shortage— A Great Achievement

WITH pride, this Company announces that the perplexing problems presented by the long drought have been solved.

There will be no shortage of power in P. G. and E. territory this year.

All demands for electricity have been met. An increased consumption of approximately twelve per cent has been supplied. Nor will rates be increased.

Behind this simple announcement lies the story of a titanic struggle by a loyal and efficient organization against appalling odds; a fight that was fought and won in silence for a public unaware that it was going on.

California's homes, industries and irrigation depend much on electric power. California uses more electricity per capita than any other state. In terms of wealth and comfort, therefore a shortage of electricity is a serious matter to us all.

Electricity in this state is made primarily by turning a wheel with falling water. Thus fuel is saved. Steam plants, much costlier to operate because they burn oil, are maintained as auxiliaries. So, a water shortage naturally implies a power shortage and higher rates.

For eight years rainfall in California has been below normal, and in 1923-24 the seasonal precipitation was only forty per cent of normal. Stored water in the principal reservoirs north of Tehachapi attained only fifty per cent of reservoir capacity.

When January passed with the drought unbroken the P. G. and E. tackled the problem of making sure of a continuous, adequate service. For weeks the Company's intrepid scouts tramped the remote Sierras on snowshoes measuring the depth and density of what snow there was. Before the Company's engineers was the sceptre of the summer's peak demand: the haunting fear that a day would come when factories, mines, farms, railways, stores and homes would be pulling on the lines together and would fail to find enough "juice" for all.

"Conserve water, and bring up steam production; work the steam stand-bys day and night, and get new steam power wherever possible" was the order, to which was added: "Cut operating costs to the minimum in order to meet the increased expense for fuel oil."

By a myriad of ingenuities and new contrivances every drop of stored water has been made to do unprecedented duty in power-production. A great steam plant, costing a million dollars, authorized January 31st, was completed and in service June 16th, a month ahead of schedule. Industrial steam-plants like those of the California Hawaiian Sugar Refinery, Mare Island Navy Yard, Northwestern Pacific Railroad, and the Hercules Powder Company, and plants disused because power bought from the Company is cheaper, were leased by the P. G. and E., oiled, and set to making current. In January the Company had 27 hydro and 5 steam plants. In September it was operating 42 plants. Cost of oil consumed leaped up three million dollars, but rigid economy in other directions held down the increase in cost of power-production so that no increase in rates will be made.

Luck was not kinder than usual. At a critical time, 144 feet of the Stanislaus flume, perched on a trestle 40 feet high, went out, and the break, 15 miles from the base of supplies, shut down a plant of 50,000 horsepower. This flume is 6 feet deep and 9 feet wide, one of the greatest in America. Shifts of heroic toilers made the repairs in 62 hours although the job was estimated to take 96.

At steam plants boiler troubles occur. Repairs ordinarily mean a stop of three days for it takes 24 hours for the interior to cool. In a particular instance a boiler was repaired in 22 hours. Some one went into that torrid boiler and removed the heated brick lining. It was all in the day's work.

Other setbacks occurred such as the prevalence of forest fires, damaging power lines and flumes, but the Company has met the requirements of the public without requesting help or favor. When new consumers asked for service they got it without a murmur. The farmer, who needed more power than ever before, was not denied. No new industry failed to get energy. The twelve per cent increase in demand for power was supplied with a smile, although there were whiles when the engineers felt a palpitation of the heart every time a stout passenger boarded a streetcar on the system.

And now, Victory. The farmer's pumping is done. The strain relaxes. We will fight tomorrow's battles with tomorrow's strength; but rain or shine the mighty Pit No. 3 will come in next season and the Company has no fear of the year ahead.

Contributing to that victory, a victory of which the public get all the fruits, was, first, a devoted and efficient organization, comprising 11,600 employes, always on their toes, guided by initiative and foresight, ambitious to maintain the unfailing standards of Pacific Service.

Then the fact that the P. G. and E., one of the largest hydro-electric companies in the United States, serves a wide territory, drawing power from numerous sources, favored by a great diversity of demand. No single plant, serving one community, could have met the situation.

Finally, the spirit of co-operation among the power companies of California who, for the sake of the public service, fed one another from time to time with surplus power, as the load here fell off, and the load there pressed harder, so that not a kilowatt of current went to waste.

When you think of the Pacific Gas and Electric Company, picture a company with 11,600 employes and 30,000 owners, nearly all Californians—a company, serving the public faithfully and on the job in all seasons and at all hours.

PACIFIC GAS AND ELECRTIC COMPANY

35-1024

It Sticks! It Holds! It Lasts!

Here is a splice which an electrician has just made with BULL DOG FRICTION TAPE

It was easy to make with this live rubber friction tape—*It Sticks*

Leave this joint for a day or two and then pull at it. The tightly wound layers resist separation. —*It Holds*

Try it again after it has been in the weather for a year or more or in some hot corner where conditions are pretty bad for electric tape. It has become a solid unyielding mass good for an indefinite length of time. —*It Lasts*

BULL DOG
FRICTION TAPE

is conveniently packed in 1, 2, 4 and 8-oz. rolls in individual cartons and assembled in counter display containers. Carton and containers are especially attractive in color and very helpful in making quick sales of BULL DOG Tape.

BOSTON WOVEN HOSE AND RUBBER CO., *Cambridge, Massachusetts*

→ Before you buy POLES — See Weyerhaeuser ←

One look at these poles and any experienced pole buyer knows that they are live peeled. At Weyerhaeuser logging camps it is a rule to cut only *live* timber for poles. This photograph shows a fine lot of poles in one of the five Weyerhaeuser storage yards.

Weyerhaeuser Sales Company Announces a New Service *for* Buyers of Cedar Poles

THROUGH an extension of logging operations into some very fine tracts of Idaho Red Cedar pole timber the Weyerhaeuser organization now makes available to the buyer of poles a new and dependable source of supply.

The important thing about it is not that Weyerhaeuser should go into the pole business. Weyerhaeuser mills have been producing a very high quality of Idaho Red Cedar poles for years. Part of their production has been marketed direct; the balance, in years past, has been sold through jobbers. Therefore, it is quite possible that you may have some Weyerhaeuser poles in your own lines today.

The *outstanding* facts are that Cedar Poles now become a *permanent feature* and *specialty* of the Weyerhaeuser business; and that from *now on* the increasing cedar pole production of the Weyerhaeuser mills will be marketed *direct,* on a nationwide *service* basis, to a *limited* number of *selected* pole users.

All of this is in line with the Weyerhaeuser desire to control the sales and service ends of their business as well as the production end. Storage facilities have been enlarged and improved. The entire cedar operation of the Weyerhaeuser business is now in charge of experienced pole men from production to final inspection and shipment.

The policy of cutting material only for the purpose for which it is best fitted is fundamental with the Weyerhaeuser organization. Selection of pole material starts in the standing timber. Because of the magnitude and diversity of their lumber

Weyerhaeuser Idaho

Before you buy POLES—See Weyerhaeuser

These fine poles illustrate what we mean by sound heart and straightness. In the Weyerhaeuser forests when a tree is selected as pole material it doesn't follow that it will become a pole. It has to pass a lot of rigid inspection before it is loaded out.

Large Pole Stocks Formerly Sold Through Jobbers Now Marketed Direct

operations there is no temptation to try to make poles out of anything other than first-class pole timber. The five large and completely equipped storage yards, and the insistence of Weyerhaeuser officials that "Weyerhaeuser customers must be taken care of" assures an adequate supply and prompt shipment at all times.

Every month a few more buyers are finding out the advantages of doing business with this organization.

We don't make all the poles but we do produce some very fine ones.

We don't want all the orders. But we can take care of a few more "Weyerhaeuser permanent customers" on a basis that will make it worth their while.

The next time you are in the market for poles or piling—either treated or untreated—write to us.

WEYERHAEUSER SALES COMPANY

Distributors: WEYERHAEUSER FOREST PRODUCTS

General Offices · SPOKANE, WASHINGTON

Branch Offices

ST. PAUL, 2694 University Ave. · CHICAGO, 208 South La Salle St. · BALTIMORE, 812 Lexington Bldg. · NEW YORK, 220 Broadway

F. H. Burke, Chicago Office, Manager of Cedar Pole Sales · R. L. Bayne, Spokane Office, Manager of Cedar Pole Service

Red Cedar Poles

Individualized Service

DEMAND
A CALOL BRAND

For Internal Lubrication of Steam Cylinders
Calol Cylinder Oils
Calol Valve Oil
Calol H. P. Cylinder Oil

For High Speed Service and Exacting Conditions
Calol Engine Oil
Calol Dynamo & Motor Oil

For the Exacting Service of Steam Turbines
Calol Turbine Oil
Calol Turbine Oil Heavy

For Bearing Lubrication of Engines and Shafting under all conditions of Speed, Temperature, Size and Type of Application
Calol Engine Oil
Calol Red Engine Oil
Calol Heavy Red Engine Oil
Calol Heavy Red Journal Oil

In dealing with industrial users this Company offers not merely lubricants of known and uniformly reliable quality, but a body of knowledge and experience constantly being added to, and always at the disposal of our customers.

The *final* cost of *correct lubrication, individualized* with reference to the special lubricating problems encountered in your plant, is always less than when lubricants are purchased more or less indiscriminately.

Ask our field representative,—an engineer who has specialized in just such lubrication problems as you are dealing with—to demonstrate Correct Lubrication in your plant.

STANDARD OIL COMPANY
(California)

STANDARD OILS
FOR ELECTRICAL EQUIPMENT

Have You a Copy of this Interesting "Across the Line" Bulletin?

(CLASS 8527)

It should be in your files for ready reference the next time you are in need of an efficient, dependable, easily installed switch.

Space is too limited here to go into its **many** advantages and exclusive features, but the bulletin which we are holding for you tells the story.

You use across-the-line switches; why not use the best you can buy—not necessarily the most expensive? **To whom shall we address the bulletin?**

STAR SERVICE
for
Twenty-five Years

STAR Brands—

Rhode Island Red Rubber Covered Wire
Cleanest to handle, easiest to pull in.
Will not soil hands, walls or ceiling.

Black and White Rubber Covered Wires

Weatherproof Wires

Lamp Cords and Special Cords

Twisted Telephone Wires

Pacific Coast Stocks now available

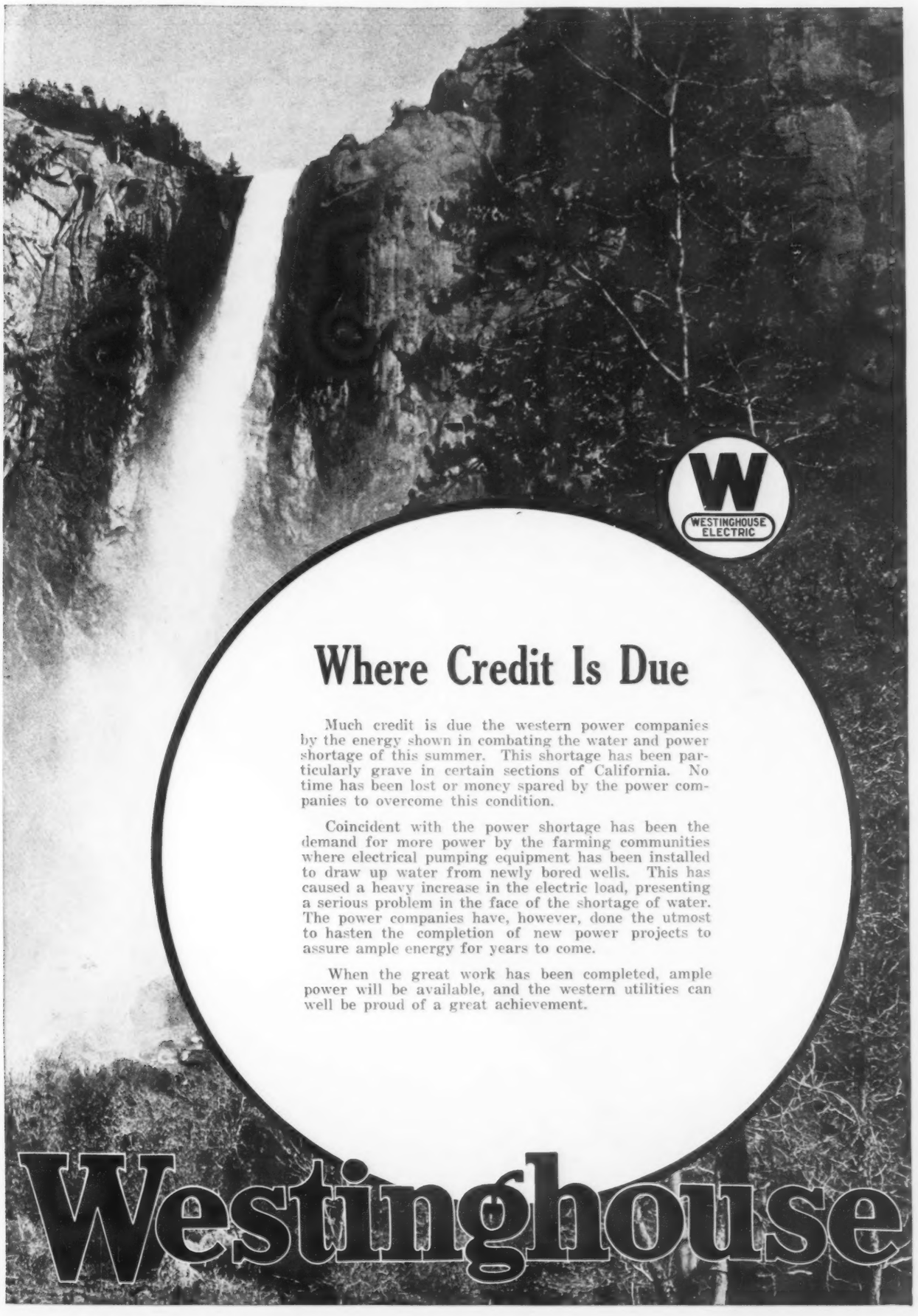
Manufactured by
Providence Insulated Wire Company
Providence, R. I.

MAYDWELL & HARTZELL, INC.

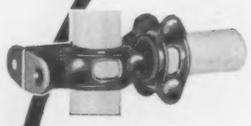
FACTORY DISTRIBUTORS

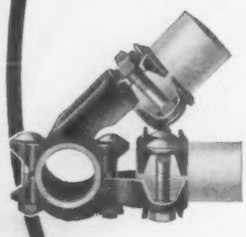
158-168 Eleventh St.
San Francisco

Transportation Bldg.
Los Angeles


W
WESTINGHOUSE
ELECTRIC
Where Credit Is Due
Much credit is due the western power companies by the energy shown in combating the water and power shortage of this summer. This shortage has been particularly grave in certain sections of California. No time has been lost or money spared by the power companies to overcome this condition.
Coincident with the power shortage has been the demand for more power by the farming communities where electrical pumping equipment has been installed to draw up water from newly bored wells. This has caused a heavy increase in the electric load, presenting a serious problem in the face of the shortage of water. The power companies have, however, done the utmost to hasten the completion of new power projects to assure ample energy for years to come.
When the great work has been completed, ample power will be available, and the western utilities can well be proud of a great achievement.
Westinghouse

Fittings for Pipe Structures





The Passing of the U-Bolt Pipe Fittings

The new Westinghouse yoke-bolt fittings for pipe structures have made the U-bolt fittings obsolete.

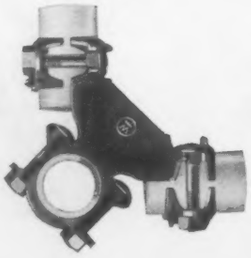
The great saving of time and labor in assembling made possible with these new yoke-bolt fittings, will practically pay for the cost of the fittings themselves. Because of their flexibility, more than 5,000 different combinations can be made with only 50 Westinghouse fittings.

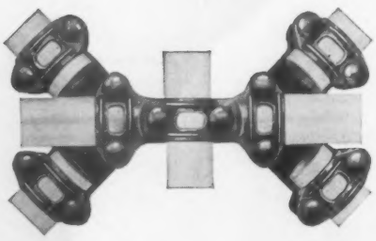
Westinghouse structural pipe fittings represent one of the most important advances made in pipe fittings. They excel in strength, interchangeability, flexibility and adaptability.

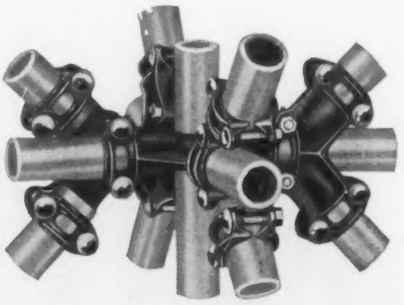
Prompt shipments can be made from large and complete stocks. Write today for a copy of Circular 1676, which completely describes and illustrates these new Westinghouse structural pipe fittings, and also a new line of cable rack fittings and a novel insert for concrete work.

W WESTINGHOUSE ELECTRIC

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of the
United States and Foreign Countries

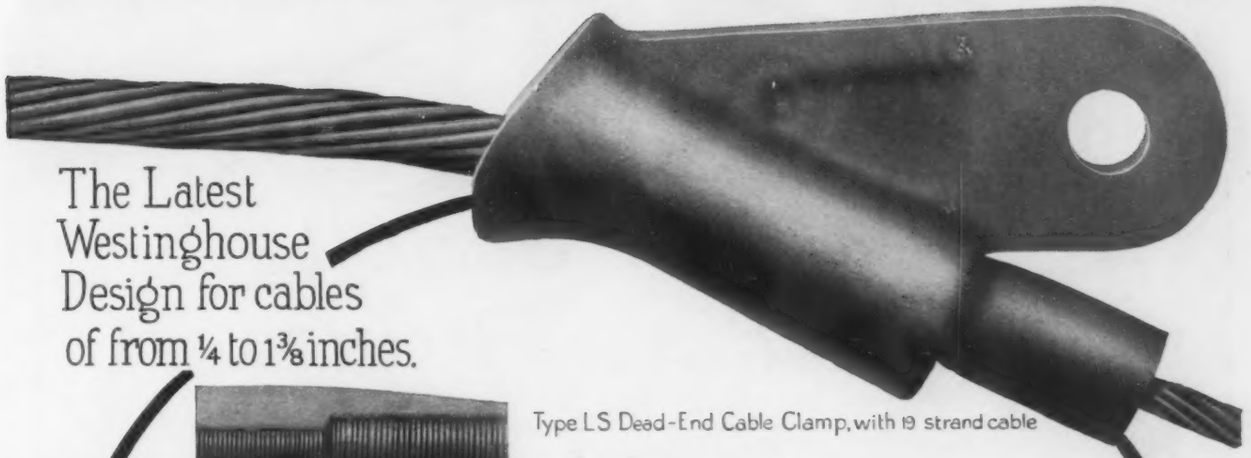




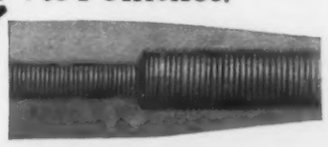


Westinghouse

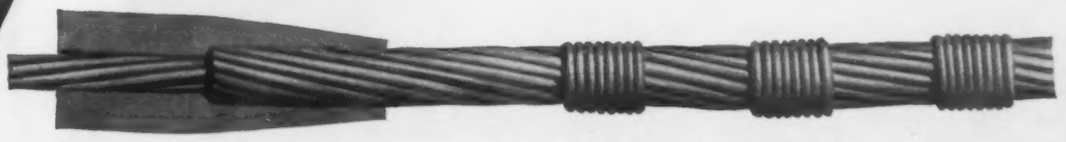
Type LS Dead-End Cable Clamp



The Latest Westinghouse Design for cables of from ¼ to 1⅜ inches.



Type LS Dead-End Cable Clamp, with 19 strand cable



Chuck for 19-strand cable showing method of inserting cable.

The LS Clamp consists of two parts, a bronze shell and a split chuck.

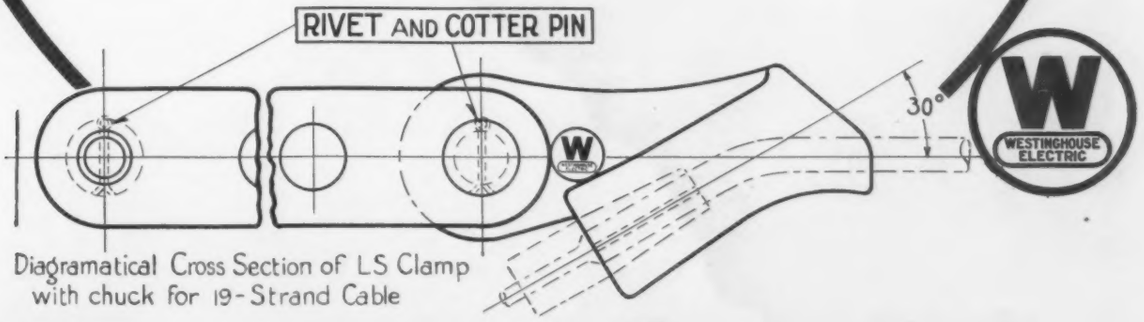
The dead-end of the cable is placed in the split chuck, which is inserted in the shell where it is firmly held in place by the chuck which is drawn into a tapered chamber in the shell by the strain on the cable. In all cases the cable will conform itself to the curve of the casting, when the load is applied to the cable. The chucks are made in three sizes:

A single chuck for cables consisting of 7 strands.
A double chuck for cables consisting of 19 strands.
A triple chuck for cables consisting of 3 strands.

The illustrations show the LS Clamp with a double chuck for a 19-inch cable.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania

Sales Offices in All Principal Cities of the United States and Foreign Countries



Diagramatical Cross Section of LS Clamp with chuck for 19-Strand Cable

Westinghouse

Your Town—ten years from now!

CENTRAL station officials who keep abreast of the developments of their town, know just about what is going to happen in the way of future improvements. They plan and arrange their work to take care of the growth and future developments that they know are bound to come.

For instance, the well-planned street lighting which serves Cherokee Village, a suburb of Louisville, Ky., is an excellent example of intelligent foresight and preparedness.

Study your possibilities.

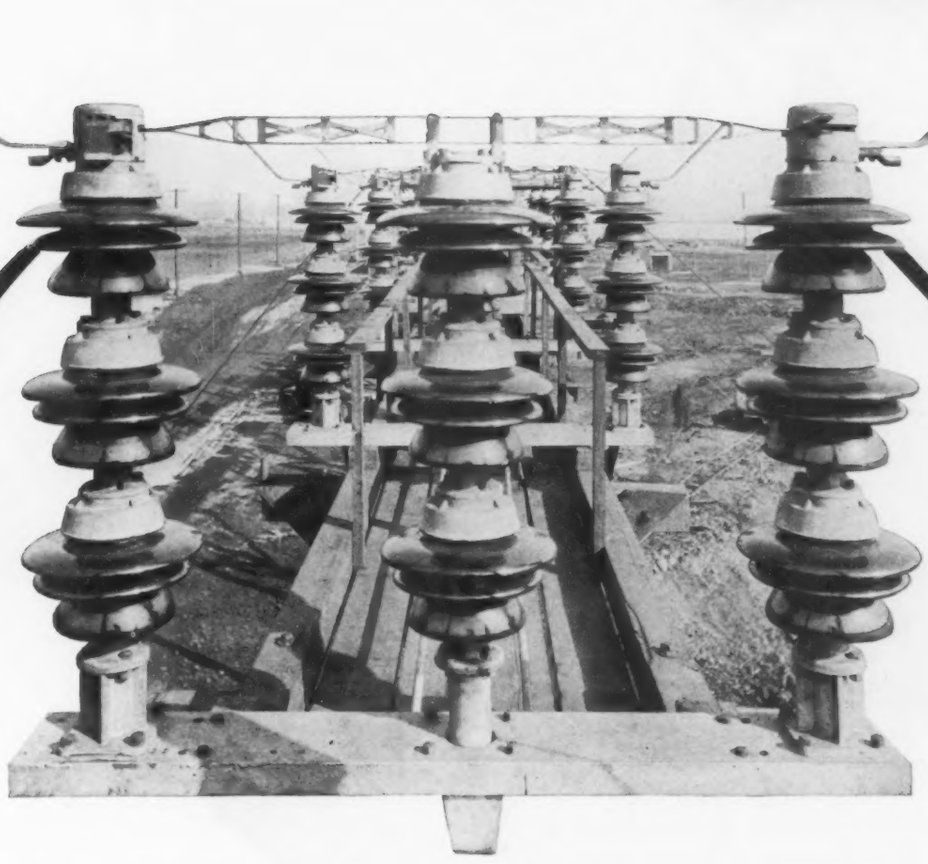
Westinghouse Illuminating Engineers will gladly give you the facts and figures on the value of more and better street lighting.

Westinghouse Electric & Manufacturing Company
George Cutter Works South Bend, Ind.
Sales Offices in All Principal Cities of the United States and Foreign Countries

W
WESTINGHOUSE ELECTRIC

Westinghouse

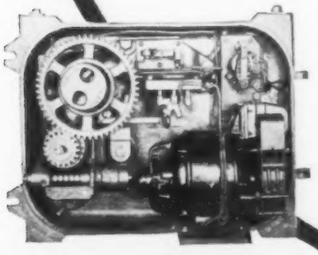
Disconnecting Switches



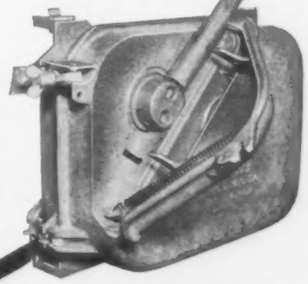
Westinghouse 132 Kv., 3-Pole, Gang-Operated Disconnecting Switch, mounted on temporary structure along with five competitive disconnecting switches, for prospective customers' inspection and test.

Best By Test

After careful inspection and exhaustive tests of various makes of disconnecting switches under actual operating conditions, a large eastern public utility company decided in favor of Westinghouse "RH" Disconnecting Switches, and placed an order for ninety-three 132 kv. units of this type.



Motor-Operated Mechanism. Compact, light in weight, all parts assembled in one case and arranged for A.C. or D C. operation.

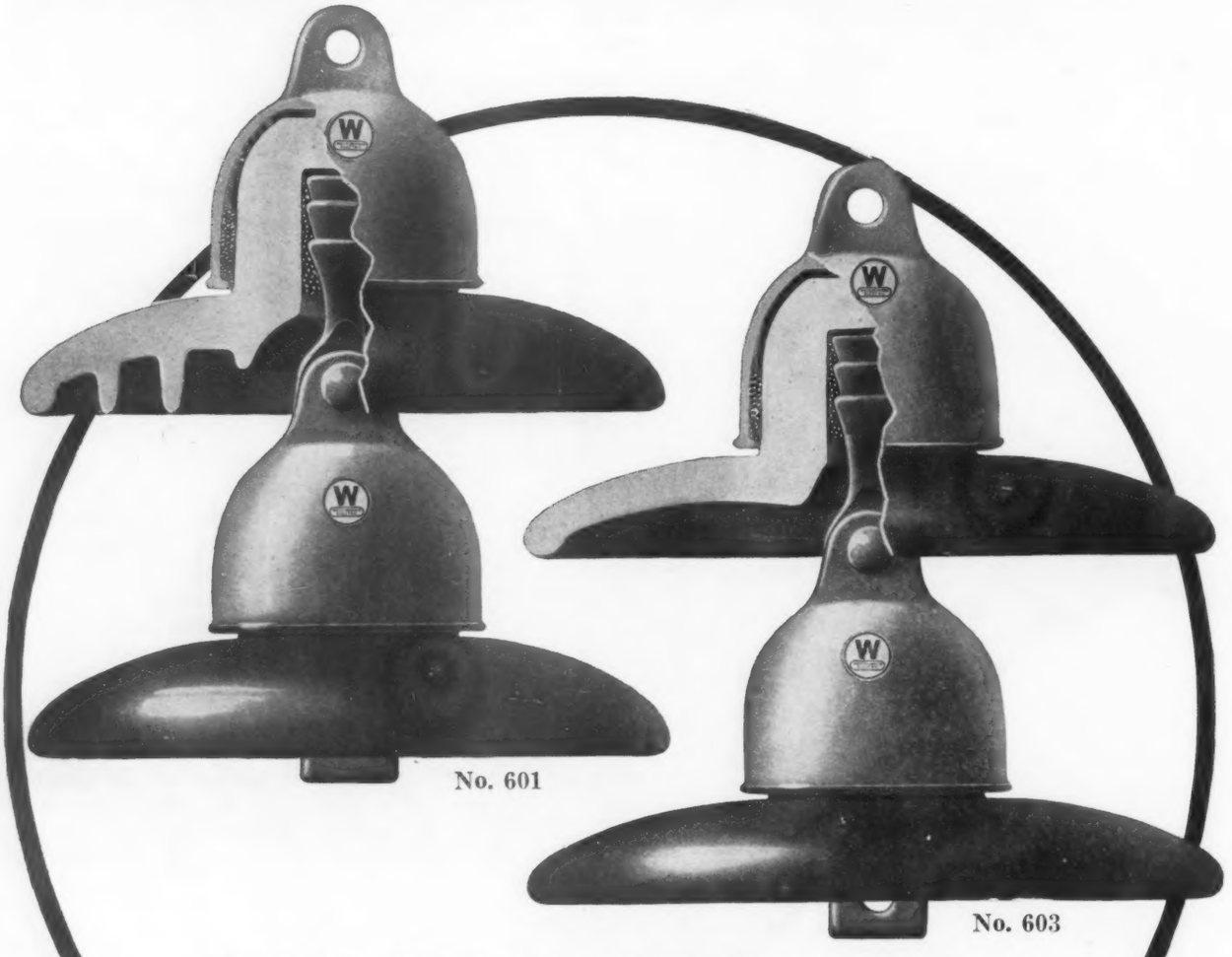


Motor-Operated Mechanism with the emergency door open and lever inserted for hand operation.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of
the United States & Foreign Countries

Westinghouse

Porcelain Suspension Insulators



No. 601

No. 603

The design and construction of Westinghouse Insulators looks good and is good. The uniformly durable service on the largest high-tension transmission systems is evidence of their quality.

Furthermore, the whole Westinghouse organization is back of each Westinghouse Porcelain Insulator and guarantees its service.

Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pennsylvania

Butte, 52 East Broadway
Casper, Wyo.
Denver, 910 Fifteenth St.
El Paso, Mills Building
Fresno, Griffith-McKenzie Bldg.
Los Angeles, 420 S. San Pedro St.
Portland, Porter Bldg.
Salt Lake City, 2nd South and Main Sts.
San Francisco, 1 Montgomery St.
Seattle, 3451 E. Marginal Way
Spokane, 821 Old National Bank Bldg.
Tacoma, 615 Rust Bldg.
Tucson, 90 Church St.

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Westinghouse

Journal of Electricity

A McGraw-Hill Publication
Published Semi-Monthly
Established 1887

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VOLUME 53 — SAN FRANCISCO, OCTOBER 15, 1924 — NUMBER 8

Contents

Editorials 267

Appliance Distribution in Seven Small Pacific Coast Cities 271
This article reviews the channels of distribution of electrical appliances in cities from 3,000 to 25,000 population and reveals the merchandising tendency.

The Value of an Outlet to the Electrical Industry 277
By E. W. DAY
The unit of measure of electrical progress is established as the outlet and the value of the outlet in dollars and cents is stated.

Selling More Merchandise Through Better Window Displays 283
By GEORGE L. BLACK
The psychology of attractive windows and the reaction of the public to carefully prepared displays is brought out by Mr. Black.

Government Ownership 289
By HON. HERBERT HOOVER
Excerpts from an address broadcast by radio showing the Secretary's aversion to government meddling in private business.

The Electrical Dealer's Opportunity in Radio 288
By A. S. LINDSTROM
Despite the present tendencies in radio distribution there is still a valuable field available to electrical dealers.

Discussion 268

Journal of Electricity Appliance Directories 292
- Washing Machine Directory 292
- Electric Ironer Directory 294
- Electric Radiator and Heater Directory 295
- Vacuum Cleaner Directory 296
- Electric Range Directory 298

The Coast Outlet 300
Industrial News 302
Books and Bulletins 307
Meetings 308
Manufacturer, Dealer and Jobber Activities 309
Personals 310
Trade Outlook 312

McGRAW-HILL COMPANY OF CALIFORNIA — 883 Mission St. — SAN FRANCISCO
Northwest Office: 1206 Spalding Building, Portland, Ore.
PUBLISHERS OF **Journal of Electricity**

JAMES H. McGRAW, PRESIDENT — C. T. HUTCHINSON, VICE-PRES. & GEN. MGR. — C. M. LINDSAY, VICE-PRES. & TREAS.

WASHINGTON, Colorado Building
CHICAGO, Old Colony Building
PHILADELPHIA, Real Estate Trust Building
CLEVELAND, Leader-News Building
ST. LOUIS, Star Building
NEW YORK, Tenth Ave. at 36th St.

Subscription rates in United States, Canada, Mexico, Porto Rico, U. S. Possessions, Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Nicaragua, Panama, Guatemala, Paraguay, Peru, Honduras, Salvador, Uruguay, and Spain, $2.00 per year, 2 years $3.00. Elsewhere $3.00 Gold (13 Shillings). Single copy, 25c. When change of address is required, both old and new addresses must be given. Notice must be received two weeks before change takes place.

McGRAW-HILL CO., Inc., New York
Publishers of
American Machinist—European Edition
(*Published in London*)
Electrical Retailing — Industrial Engineer
(*Published in Chicago*)
Chemical and Metallurgical Engineering
American Machinist — Ingenieria Internacional
Electrical World — Electric Railway Journal
Engineering and Mining Journal-Press
Bus Transportation — Engineering News-Record
Coal Age — Electrical Merchandising — Power

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By McGraw-Hill Company of California

Entered as second-class matter Feb. 17, 1921, at the Post Office at San Francisco, California, under Act of March 3, 1879.

Member Audit Bureau of Circulation

Printed in U. S. A.

Fall Business Conditions

IF one may paraphrase a well known advertising slogan, it might be said: If you want to know how business is ask the man who knows.

R. C. Lamphier, vice-president of the Sangamo Electric Company, Springfield, Ill., says, "I feel that if Coolidge is re-elected there is no reason why 1925 should not be a good year for the whole world."

Wm. H. Thornley, president of the Tubular Woven Fabric Company, Pawtucket, R. I., says, "It is my belief that favorable influences predominate in the present business situation."

Edwin B. Gillinder, president of Gillinder Brothers, Inc., Port Jervis, N. Y., says, "There is still a large amount of new building being contracted for, and this, together with the tremendous field of unwired houses and poorly lighted commercial establishments should produce business for 1925."

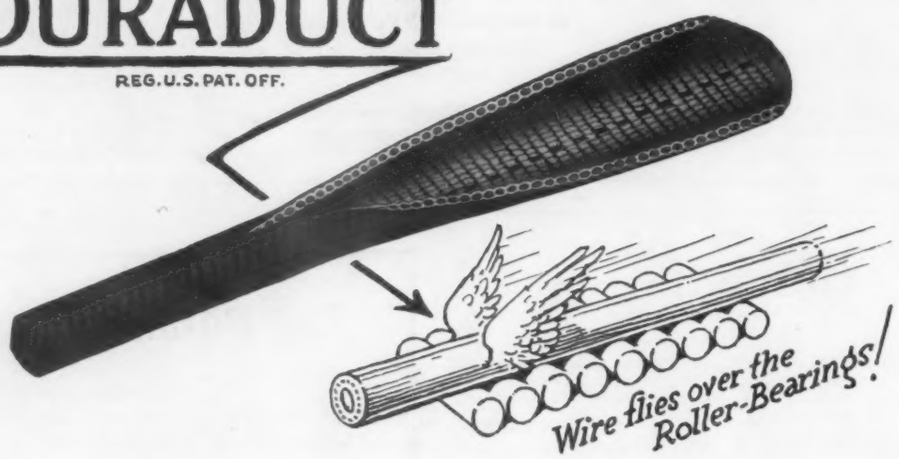
F. M. Bernardin, president of the B-R Electric Company, Kansas City, Mo., says, "We do not hesitate to express the opinion that the fall and winter months of 1924 should bring the best wholesale and retail activity that has been experienced since 1920."

Enoch B. Seitz, executive secretary of the Washing Machine Manufacturers' Association, Chicago, says, "We are running considerably above the average of general business. Our market is assured, and in the absence of extreme depression we should continue at our present rate of production and sales."

Everywhere the outlook for the winter of 1924 and for 1925 is excellent. Carloadings are on the upgrade, light and power financing has broken all records, utilities' shares are making record increases, department stores, railroads and hardware dealers unite in predicting for 1925 a banner year. There is no place for the pessimist; he will be left behind in the race while his more enterprising competitors gather the cream of the business.

DURADUCT

REG. U. S. PAT. OFF.



Thousands of Contractors Have Discovered That Wire Slides Through Duraduct with Lightning Speed!

These live-wire contractors are way ahead of their competitors when it comes to doing a good wiring job in the shortest possible time.

You know how it is when fishing a long length of ordinary loom. The waxed braid on the wire slides back, bunches up, clogs the tube; you do a lot of cussing, and finally pull the wire out, cut off the bunch, and start again nursing the wire through the tube.

That's where the user of DURADUCT gets the jump on his competitor. He can fish fifty feet as easily as five; and there's no pulling back the wire to get a fresh start. The roller-bearing wireway takes care of that.

Made at Pawtucket, R. I. by the

TUBULAR WOVEN FABRIC CO.

ALLIED INDUSTRIES, INC., Pacific Coast Representatives

Individual Initiative versus Socialism

REGARDLESS of what one's ideas may be on the subject of national politics, there can be no question whatever as to the attitude of the Republican party with respect to government ownership. President Coolidge and many distinguished members of his cabinet, including Mr. Hoover, have expressed themselves vigorously and in no uncertain language on this all-important subject. On another page of this issue we present to our readers excerpts from an address delivered by Mr. Hoover on Sept. 29. This address was made over the radio and broadcast from many nationally interconnected stations. Mr. Hoover quotes Senator La Follette as follows: "I am for government ownership of railroads and every other public utility—every one." Truly the action taken by the California Supreme Court denying to the La Follette party a place on the ballot other than under the Socialist designation has isolated the germ, so to speak, and stamped the La Follette campaign as frankly, openly and avowedly socialistic in every sense of the word. Mr. Hoover says, "Either we are to remain on the road of individual initiative, enterprise and opportunity regulated by law, on which American institutions have so far progressed, or we are to turn down the road which leads through nationalization of utilities **to the ultimate absorption into government of all industry and labor."**

It is the rankest kind of folly for men to shrug their shoulders with indifference at this situation. If perforce they feel that they are exempt, because in California at present only the power companies are being attacked, they should realize that this is simply a stage toward the achievement of the socialist view looking toward, as Mr. Hoover says, "the ultimate absorption into government of all industry and labor." A fire started may be checked by prompt action. Once let the fire of government ownership grow beyond control and the end is destruction of all the forces that have made of the United States the greatest nation in the world.

The Commissioner Reverses His Decision

NOW comes the California Railroad Commission which on Oct. 11 denied the application of the Southern California Edison Company for a temporary rate increase to cover extraordinary operating expenses due to the abnormal drought conditions of last winter. As reported in the Journal of Electricity Aug. 15, 1924, the original decision of the commission made Aug. 1 granted the contention of the Southern California Edison Company, in which judgment three commissioners—Brundige, Martin and Whittlesey—concurred, a minority report dissenting having been rendered by Commissioners Seavey and Shore.

Strange to relate, directly following the rendering of this decision Commissioner Whittlesey joined with Commissioners Seavey and Shore in reopening the case. Now Commissioner Whittlesey has reversed himself with the result as noted above. Abstracts from the text of the decision of the commission as set forth on another page in this issue will make interesting reading.

We have felt that the Southern California Edison Company was entitled to favorable action, setting forth that in our opinion the right to regulate carried with it an obligation to protect. There is always room for a difference of opinion. All of us cannot be expected to think alike on questions of this nature. Nevertheless, in view of the history of this case it would seem not unreasonable for Commissioner Whittlesey now to join with Commissioners Brundige and Martin and have a rehearing of the rehearing.

Facts Are Revealed in the Appliance Survey

THEORY is one thing and practice is something else. There has been a great deal of discussion within the industry, a great deal of theorizing as to who should sell electrical appliances. There is, however, such a thing as fundamental economic law. We have the old saying that water always seeks its own level, and that forces exerted in certain directions will invariably follow the lines of least resistance.

Our sister publication, the Electrical World, has conducted a nation-wide survey showing who actually is selling electrical appliances in certain large cities in the United States. The Journal of Electricity, following the same course of investigation, has made a similar survey in a number of cities and towns on the Pacific Coast in order to show local conditions and supplement the national data published by the Electrical World. In this issue are presented the results of a study covering seven small cities and towns on the Pacific Coast ranging in size from 3,000 to 25,000 population. These data were presented before a meeting of the Pacific Coast Elec-

trical Supply Jobbers' Association at Del Monte, Sept. 26 last, and are printed in full for the benefit of all of our readers. It would appear from the data presented that a number of preconceived ideas on this subject are at least subject to revision. It is indicated that all appliances go through a series of transitory stages from pioneer items, when they are new, untried and therefore regarded with a certain amount of question on the part of the consumer, to the last stage when they become staples and meet with ready acceptance.

The Journal's research would indicate that responsibility for pioneering falls largely upon the central stations who are best able to carry the large expense incident thereto in consideration of the value of the load thus created upon their lines. When items reach the staple or ultimate stage in their development they may be sold by any merchant, by the department store, furniture store, music store, general merchandise store, electrical specialty shop, or the establishment of the contractor-dealer.

In a few words, this seems to be the evolutionary process through which each appliance goes. Facts are the most interesting things in the world, and, incidentally, are frequently the most difficult to obtain. We believe that the jobbers, dealers and manufacturers as well as central stations may well afford to study the article carefully. In the meantime, discussion of its conclusions, for publication in the Journal, will be most welcome.

Taking Advantage of the Annual Fairs

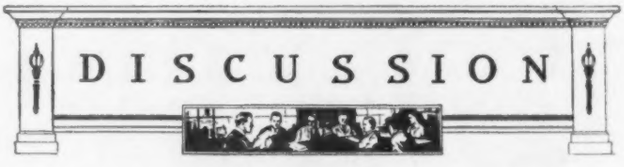
THE fall season annually brings with it the round of state, county and district fairs. These events are always favored with large attendance of people who are interested in all of the things that help to make life more enjoyable. Such occasions offer an opportunity for telling the message of electricity that is perhaps not equaled throughout the year. In the first place, the visitors are in a receptive mood and are impelled by the motive of interest. Secondly, the industry has a real story to tell, one of service. Practical working demonstrations of the equipment before throngs often totaling thousands is bound to have a beneficial reaction and the past has proved that such exhibits bring a return long after the fair is over. To those who are seriously interested in promoting the use of electrical devices, particularly those that make home life happier, this is a season of unusual opportunity.

The Outlet — The Merchandiser's Unit.

WHAT is an outlet? A small boy might say it is a hole with a ring around it. An outlet from an electrical standpoint, however, is more than a mere receptacle in which a service plug may be inserted and connection made through which electrical energy may be tapped and utilized for a thousand purposes.

Mr. E. W. Day has given us a new concept of the significance of the outlet in an article published elsewhere in this issue. In analyses of trade, market and other conditions we must base our calculations upon some definite predetermined unit. The Bureau of Census tells us all sorts of things about ourselves in per-capita terms. Finance deals with the dollar, electrical energy deals with the kilowatt and steam engineering with the horsepower. The commercial phase of the electrical industry that deals particularly with appliances, supplies and wiring has lacked this unit. Mr. Day comes forth and offers the outlet as a term which is admirably adapted to the expression of just what is what in electrical merchandising. Every outlet, according to Mr. Day, represents a definite and cumulative value to all factors of the industry, so therefore he has instituted and analyzed for the benefit of our readers the significance of the outlet as a yardstick, a unit of measurement upon which can be determined the volume of business available to our merchandising friends and the effect upon their interests of every additional outlet wherever it may be installed.

We recommend to our readers a careful study of this unique and interesting suggestion.



Turlock District Raises Objections to Recent Article

To the Editor:

Sir: Referring to the article in the Journal of Electricity for September 15 entitled "When Government Goes Into Business" I would like to call your attention to the following facts:

The Turlock and Modesto Districts are two entirely separate entities and should not be referred to as the Modesto-Turlock District. Each District has its own Board of Directors and officials and determines its own business policies.

The body of the article contains several misstatements which I would like to correct, as follows:

In the first place, while it is true that the Pacific Gas and Electric Company made an offer to purchase the output of the Don Pedro Power Plant, the price offered was not the market value for the power and the contract offered was not acceptable from the standpoint of the Turlock Irrigation District, as it did not make a clear and bona fide offer for such purchase. Mr. Leurey made a report covering the conditions as he saw them for the Modesto District, but he made no investigation with reference to the conditions in the Turlock District. The Turlock District made its own investigation and the report made no recommendations either for or against the local distribution of power but stated what the people of the district could expect in the event they decided to distribute. Acting on this information, the Turlock District voted ten to one to distribute their own power, although it was stated that it could not be put on a paying basis for probably eight years.

In regard to the manufacture of fertilizer, I stated that omitting all charges for power or for raw material, the off-peak power during the irrigation season could be used for the manufacture of fer-

tilizer. However, as the District has sold all of its surplus power, this question of fertilizer has never been investigated.

The Turlock District built its own transmission line from the power plant to the Turlock District, and the Modesto District later decided to pay us for transmitting their energy to Turlock and taking delivery at this point for themselves, rather than construct their own transmission line to the power plant.

In investigating the possibility of disposing of the Don Pedro power within the Turlock District, it appeared that the greatest market lay in the development of the electric home and the use of electricity for cooking and heating, in addition to that used for lighting. With this idea in mind, the matter was discussed with local merchants in regard to the handling of electric ranges, and they did not feel in a position to guarantee any results in the sale of electric ranges; consequently the Turlock District opened its own store for the purpose of handling electrical supplies and electric ranges. Owing to the insistent demands from our consumers, we have added to the original list certain appliances such as washing machines, etc., in order to better take care of our trade. The District does no wiring, nor does it handle lighting fixtures. The District recommends to its consumers to have the work done by recognized wiremen, and we inspect all jobs and our standard for wiring is more rigid than existed in the district prior to our commencing operation. You will see, therefore, that we have not gone into merchandising as extensively as a great many other power companies, and were forced into this field by the fact that the local dealers were unable, due to financial or other reasons, to develop the field themselves. Our retail store certainly does not handle automobile supplies or any equipment other than that stated above.

We feel that by increasing the sale of electric ranges from an average of 10 or 15 a year to nearly 300 a year, that we are not only assisting in the development of the electrical industry, but we are bringing great advantages to the farmer in that we enable him to have all the conveniences of city life at his disposal.

In closing, I would also call your attention to the fact that the District used its utmost endeavor to buy out the Pacific Gas and Electric Company within the boundaries of our District, and this company not only refused to sell but placed every obstacle in the path of condemnation proceedings, so that we were forced against our will to develop an independent distribution system.

Also, I would say that in the above letter wherever I have used the word "District" I refer entirely to the Turlock Irrigation District, and am in no way discussing the policies or methods of the Modesto District.

Although the Electrical Department of the Turlock Irrigation District is now on a paying basis, we do not believe that this is any argument whatever for the Water and Power Act, but is merely an argument against it, taking into account the different conditions that would exist between the State of California entering the power business and that which exists by virtue of a comparatively small, closely-knit political organization handling electrical power as a byproduct.

ELECTRICAL DEPARTMENT,
R. W. SHOEMAKER,
Superintendent.

A Resolution from Modesto

To the Editor:

Sir: Herewith please find certified copy of a resolution adopted by the Board of Directors in regular adjourned session, Sept. 30, 1924.

Your truly,
MODESTO IRRIGATION DISTRICT,
By C. S. ABBOTT, Secretary.

Modesto, Calif.
Oct. 1, 1924.

Resolution

Whereas, there was published in the September 15th issue of Journal of Electricity an article "When Government Goes Into Business" in which certain flagrant misrepresentations were made in an effort to discredit the distribution of Don Pedro Power in the Modesto and Turlock Irrigation Districts, and

Whereas, distribution of power has proved a marked success and an asset of inestimable value to the Districts as evidenced by the large net revenue and the fact that the Modesto and Turlock Districts are among the most prosperous of the state this year, and

Whereas, it appears to this Board that this article is an unwarranted attack upon the honor and good name of the two oldest and best irrigation Districts in the State of California,

Therefore, Be It Resolved, that the Board of Directors of the Modesto Irrigation District most emphatically deny the untrue statements in this article and said Journal should apologize for the wrong done the Districts.

Be It Further Resolved, that a certified copy of this resolution be sent the Journal of Electricity and to both local papers.

I, C. S. Abbott, Secretary of the Board of Directors of the Modesto Irrigation District, do hereby certify the foregoing to be a full, true and correct copy of a resolution adopted by said Board, September 30, 1924.

MODESTO IRRIGATION DISTRICT,
C. S. ABBOTT, Secretary.

EDITOR'S NOTE

The above resolution denies in general terms the allegations in an article entitled "When Government Goes Into Business," that appeared in the Sept. 15 issue of the Journal of Electricity. The apology demanded by the Board of Directors of the Modesto Irrigation District must be withheld by the Journal of Electricity until the following questions are conclusively answered in the negative:

1. Does or did the Modesto Irrigation District prepare a list of "approved merchants" that includes only those who purchase electrical energy from the District?

2. Does or did the Modesto Irrigation District provide placards stating "This firm is helping to reduce taxes by using Don Pedro electric power," or words to that effect?

3. Does or did this action (referred to in questions 1 and 2) constitute an approval of the merchants using Don Pedro power and, conversely, a disapproval of those not doing so, with resultant injury to the latter?

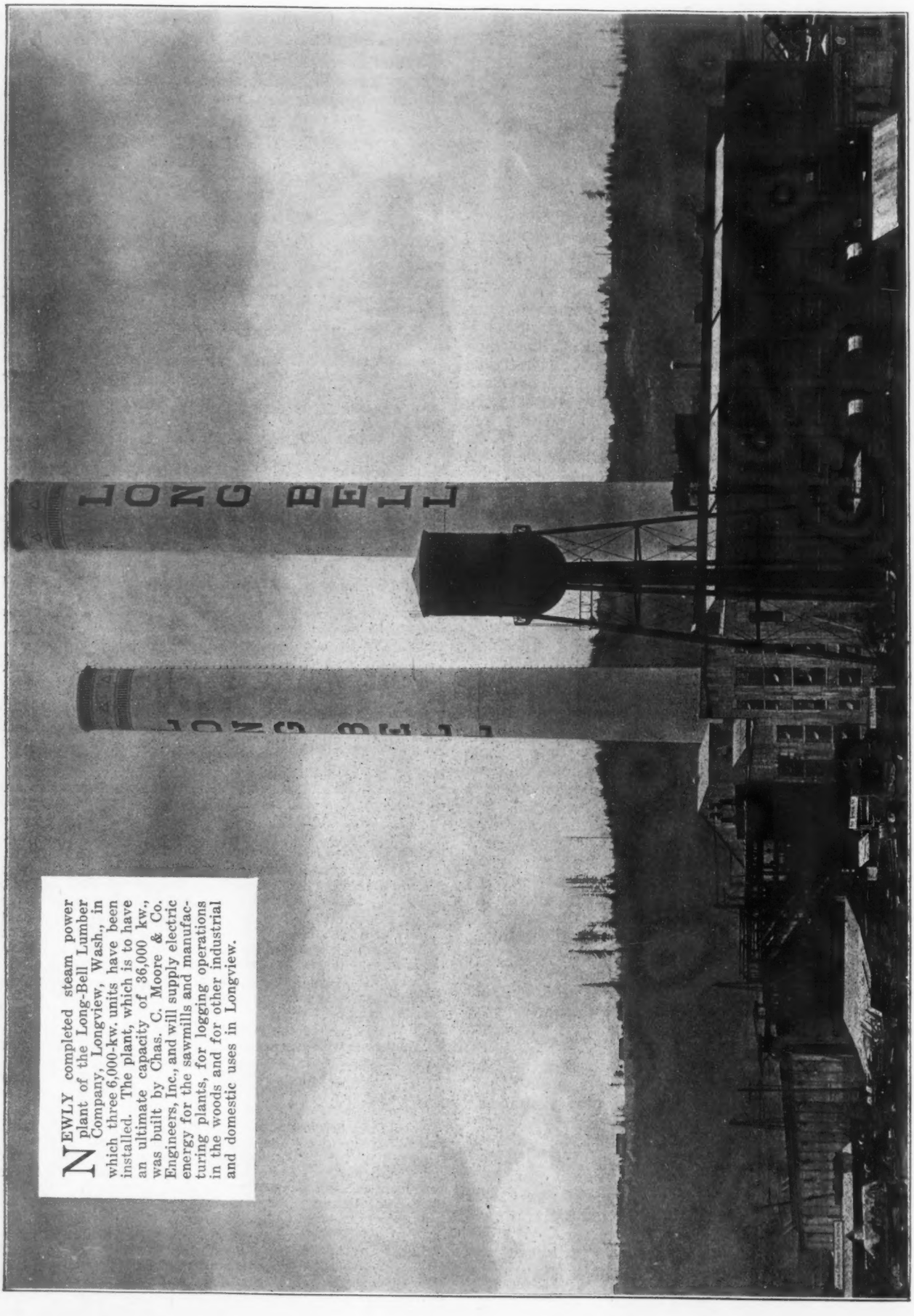
4. Does or did the Modesto Irrigation District, unless special request is made, inspect electric services only as far as the meter?

5. Does or did the Modesto Irrigation District sell wiring materials with the understanding that the purchaser may or might employ a contractor or do the wiring himself?

6. Does or did the Modesto Irrigation District sell electric wiring devices and appliances at about 20 per cent or less above jobber's price to the District?

7. Does or did the Modesto Irrigation District maintain and use a supply of mimeographed letters, addressed to the private power company serving the city, notifying said company that service is to be discontinued on the premises of the consumer as soon as the District shall have made connection with the premises of the consumer who was previously receiving service from the private company?

8. Is it true that the welfare of the electrical contractor-dealers doing business in Modesto has been adversely affected since the Modesto Irrigation District has been competing with them in the retailing of electrical appliances and wiring devices?



NEWLY completed steam power plant of the Long-Bell Lumber Company, Longview, Wash., in which three 6,000-kw. units have been installed. The plant, which is to have an ultimate capacity of 36,000 kw., was built by Chas. C. Moore & Co. Engineers, Inc., and will supply electric energy for the sawmills and manufacturing plants, for logging operations in the woods and for other industrial and domestic uses in Longview.

Appliance Distribution in Seven Small Pacific Coast Cities

IN extending the movement inaugurated by Electrical World early this year, the Journal of Electricity has completed surveys in seven small Pacific Coast cities to determine who is selling electrical appliances. The results, which should prove of great interest to every branch of the electrical industry, are presented herewith. The story does not include the editor's opinions but merely the criticisms and statements of the men interviewed. It attempts to do nothing more than present a cross section of the appliance distribution situation in the small cities of the West.

THE interest created in the movement inaugurated by Electrical World early this year to determine who is selling electrical appliances in the cities and towns of the United States has been so widespread that the Journal of Electricity has extended these surveys to seven of the small cities and towns of the Pacific Coast states ranging in size from 3,000 to 25,000 population. The surveys were made in conjunction with the editors of Electrical World as that publication is making a national survey of the situation and will shortly publish the results for a large number of small cities.

The seven cities selected were taken at random with no reference to local conditions. Three cities, one each in Washington, Oregon and Utah, were surveyed and the remaining four were in California. In three of the cities the central station is actively merchandising; in four it is not. Two of the cities are served by municipal distribution systems. It was found during the course of the surveys that any unusual local condition such as the general business situation, the proximity of the city to a large metropolitan district, the presence or absence of a local electrical league, etc., had a definite bearing both on the volume of appliances sold and on the distribution of sales through the various outlets. Before attempting to set down any of the conclusions resulting from the surveys, a short sketch of the situation in each city will be presented.

Interest Not Keen in City I

Lack of interest in the appliance business and the small amount of business being done by all dealers were the impressive features of City I, a town of 3,500 in western Washington, dependent for its existence upon a prosperous dairying and farming region.

The city has only two electric stores, one of which makes no pretense of doing an appliance business. This establishment is on a side street and depends almost solely upon wiring and fixtures, although lamps and a small stock of appliances are carried for the convenience of wiring customers. The other appliance store is run as a department of an establishment handling cameras, stationery, pictures, picture frames, etc. The proprietor of this store was not sufficiently interested in his electrical department to be able to tell whether it was making money.

The central station maintains a fair appliance store in connection with its interurban depot, but has not been very active in the appliance business in the past. The company plans, however, to remodel its store and aggressively enter the merchandising field. Ranges have been successfully exploited by the power company in this and other districts and a creditable showing has been made.

Of the non-electrical outlets there were two hardware stores and one drug store, all doing a small appliance business. One hardware dealer has discontinued his line of washing machines and vacuum cleaners, because, he stated, competition from outside house-to-house sales crews which campaign the territory at irregular intervals, had killed this business.

In this city the two electrical dealers are doing 45 per cent of the appliance business, the central station 38.4 per cent and the hardware stores 13.2 per cent. The balance is being done by the drug store.

Complete Harmony in City II

Complete harmony and a friendly spirit of cooperation among the retail dealers selling appliances were found to exist in City II, a town of 8,000 inhabitants in eastern Oregon. Two electrical dealers, the central station and one hardware store are doing practically all of the appliance business. A furniture store handles washing machines and vacuum cleaners. The two dealers are doing 40.7 per cent of the business, the central station 38.7 per cent and the hardware store 17.4 per cent.

The power company only recently has become active in the merchandising business. It is planning to build a larger appliance load by devoting more effort to this phase of its business. Although the company has a gas as well as an electric distribution system it sells as many electric ranges as possible. At the time this survey was made an electric range campaign was under way which promised to be very successful.

The one hardware store likes the appliance business and is planning to become more aggressive in the near future upon the completion of a new store. Its electrical business has been increasing at the rate

CITY I

	Washing Machines	Vacuum Cleaners	Flat-irons	Curling Irons	Toasters	Perco-lators	Small Heaters	Waffle Irons	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores										
Store "A"	12	.....	20	.....	.....	.....	.....	.....		
Store "B"	.....	.....	15	10	12	6	.....	.....		
Total	12	.....	35	10	12	6	.....	.....		
Value	$1,500	.....	$210	$20	$72	$72	.....	.....	$1,874	13.2
Per Cent of Appliance Sales	80.0	.....	11.2	1.0	3.8	3.8	.....	.....		
Contractor-Dealer										
Store "C"	8	.....	12	.....	12	6	.....	.....		
Store "D"	24	12	50	150	60	50	.....	.....		
Total	32	12	62	150	72	56	.....	.....		
Value	$4,000	$630	$372	$300	$432	$674	.....	.....	$6,408	45.0
Per Cent of Appliance Sales	62.5	9.8	5.8	4.7	6.7	10.5	.....	.....		
Drug Stores										
Store "E"	.....	.....	25	50	20	10	.....	.....		
Value	.....	.....	$150	$100	$120	$120	.....	.....	$490	3.4
Per Cent of Appliance Sales	.....	.....	30.6	20.4	24.5	24.5	.....	.....		
Central Station	24	36	36	30	12	20	.....	.....		
Value	$3,000	$1,890	$216	$60	$72	$240	.....	.....	$5,478	38.4
Per Cent of Appliance Sales	54.7	34.5	3.9	1.1	1.3	4.5	.....	.....		
Grand Totals										
All Dealers	68	48	158	240	116	92	.....	.....		
Value	$8,500	$2,520	$948	$480	$696	$1,106	.....	.....	$14,250	100.0
Per Cent of Total Sales	59.6	17.7	6.6	3.4	4.9	7.8	.....	.....		

of 25 per cent a year. As this city is the wholesale center for a large mining, stock-raising and lumbering region, the hardware dealer jobs, among other things, a standard line of electrical appliances.

City III Has No Electrical Dealer

Not a single electrical dealer—such was the situation in City III, a town of 12,000 population in Utah. One wiring contractor who has maintained a store and sold appliances for a number of years announced that upon the closing out of his present stock he would forsake merchandising and devote his entire attention to wiring. He gave as his reason the fact that he cannot compete successfully with the power company, the department store and the hardware store. As these establishments have aggressively gone after the appliance business, his sales have dropped off until today he is forced to admit failure.

The central station maintains an appliance store at its district offices and is actually merchandising appliances and ranges. It maintains a fair attitude toward the other retail outlets for appliances.

A large general merchandise store handles electrical appliances of all kinds except ranges. The manager of this store is a skilled merchandiser and is doing an increasing business in his electrical department. His chief criticism regarding the appliance business was that he was hard pressed to compete with the low terms on the heavier appliances offered by the central station.

One hardware store was handling a cheap line of appliances. This establishment started out several years ago as an exclusive hardware store and gradually branched into the wiring and appliance business. However, the volume of appliances sold is small in comparison to the volume of hardware. Two furniture stores are selling washing machines and vacuum cleaners. Both are doing a fair business and one announced the intention of taking on a new line of washers, and, by campaigning, to double his washing machine business. The proprietor of the other expressed the opinion that the furniture store is not the proper outlet to handle the smaller appliances.

The central station leads in volume with 38 per cent of the total for the city. The department store is doing 31.3 per cent of the business, the two furniture stores 24.7 and the hardware store the balance.

Department Store Heads Dealers in City IV

The rapidity and apparent ease with which a non-electrical merchandiser can dominate the field in

CITY II

	Washing Machines	Vacuum Cleaners	Flatirons	Curling Irons	Toasters	Percolators	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores								
Store "A"	35	.....	60	12	12	25		
Value	$4,375	.....	$360	$24	$72	$300	$5,131	17.4
Per Cent of Appliance Sales	85.3	.....	7.0	0.5	1.4	5.8		
Contractor-Dealers								
Store "B"	2	4	60	72	12	6		
Store "C"	35	50	200	500	140	75		
Total	37	54	260	572	152	81		
Value	$4,625	$2,835	$1,560	$1,144	$912	$972	$12,048	40.7
Per Cent of Appliance Sales	38.4	23.5	13.0	9.5	7.5	8.1		
Furniture Stores								
Store "D"	6	4	.....	.....	.....	.....		
Value	$750	$210	.....	.....	.....	.....	$960	3.2
Per Cent of Appliance Sales	78.1	21.9	.....	.....	.....	.....		
Central Station	70	20	150	40	36	40		
Value	$8,750	$1,010	$900	$80	$216	$480	$11,436	38.7
Per Cent of Appliance Sales	76.5	8.8	7.9	0.7	1.9	4.2		
Grand Total								
All Dealers	148	78	470	624	200	146		
Value	$18,500	$4,055	$2,820	$1,248	$1,200	$1,752	$29,575	100.0
Per Cent of Total Sales	62.6	13.7	9.5	4.2	4.1	5.9		

CITY III

	Washing Machines	Vacuum Cleaners	Flat-irons	Curling Irons	Toasters	Perco-lators	Total Sales Each Class of Store	Per Cent of Total for City
Contractor-Dealer								
*Store "A"	.....	.....	100	36	6	.....		
Value	.....	.....	$600	$72	$36	.....	$708	1.2
Per Cent of Appliance Sales	.....	.....	84.7	10.2	5.1	.....		
Hardware Stores								
Store "B"	12	10	72	100	12	6		
Value	$1,500	$525	$432	$200	$72	$72	$2,801	4.8
Per Cent of Appliance Sales	53.5	18.7	15.4	7.2	2.6	2.6		
Department Stores								
Store "C"	120	48	60	48	48	12		
Value	$15,000	$2,520	$360	$96	$288	$144	$18,408	31.3
Per Cent of Appliance Sales	81.5	13.7	1.9	0.5	1.6	0.8		
Furniture Stores								
Store "D"	40	60	.....	.....	.....	.....		
Store "E"	50	4	.....	.....	.....	.....		
Total	90	64	.....	.....	.....	.....		
Value	$11,250	$3,360	.....	.....	.....	.....	$14,610	24.7
Per Cent of Appliance Sales	77.0	33.0	.....	.....	.....	.....		
Central Station	152	28	246	79	30	4		
Value	$19,000	$1,470	$1,476	$158	$180	$48	$22,332	38.0
Per Cent of Appliance Sales	85.1	6.6	6.6	0.7	0.8	0.2		
Grand Total								
All Dealers	374	150	478	265	96	22		
Value	$46,750	$7,875	$2,868	$526	$576	$264	$58,859	100.0
Per Cent of Total Sales	79.4	13.4	4.9	0.9	1.0	0.4		

*Going out of business.

a short period of time has been forcibly demonstrated in the case of City IV, a town of 3,200 population in California where a department store is doing 58.5 per cent of the business at the present time. Three years ago electrical appliances were carried merely as a convenience to the patrons of the house. Today an electrical department is an important part of the store. The increase in volume of sales has been 50 per cent a year while the two competing electrical contractor-dealers have been either just holding their own or showing but a slight increase above normal growth.

Of the two electrical contractor-dealers one was found to be an enterprising business man with a well appearing store and a firm hold on the major portion of the wiring contracting and of the appliance business as between the two electrical dealers.

Apparently lack of service and attention to electric range customers on the part of the municipal distribution system is responsible for the fact that there are 30 per cent less ranges in service at the present time than there were when the system was taken over from the private utility three years ago, this in spite of the fact that a special rate is offered for cooking and heating. The municipal plant does not sell appliances.

The town is the distributing center for a large agricultural and mining region and general business conditions are fair.

Hardware Dealers versus Lone Contractor-Dealer in City V

One lone electrical contractor-dealer in City V is making a determined stand against the inroads of two hardware stores which are doing 62.6 per cent of the appliance business. In an effort to maintain his store in the town's shopping center he has added a line of bicycles and phonographs, both of which are important factors in his annual gross volume of business.

One of the two hardware stores is not actively pushing appliances but the other is alive to the possibilities of this class of merchandise and in addition to maintaining a well stocked electrical department has recently entered the contracting field also. The merchandising instinct of the hardware merchant has shown this dealer the potential business in radio in small towns and rural districts and has resulted in the establishment in his store of the only radio department in town. Although the electrical dealer would seem the logical outlet for radio equipment, and in this particular case he already has a grip on

CITY IV

	Washing Machines	Vacuum Cleaners	Flat-irons	Curling Irons	Toasters	Perco-lators	Small Heaters	Waffle Irons	Total Sales Each Class of Store	Per Cent of Total for City
Contractor-Dealers										
Store "A"	6	10	60	250	20	20	40	18		
Store "B"	4	2	20	50	5	5	10	6		
Total	10	12	80	300	25	25	50	24		
Value	$1,250	$630	$480	$600	$150	$300	$450	$360	$4,220	41.5
Per Cent of Appliance Sales	29.6	14.9	11.4	14.2	3.6	7.1	10.6	8.5		
Department Stores										
Store "C"	10	60	50	50	30	30	30	24		
Value	$1,250	$3,150	$300	$100	$180	$360	$270	$360	$5,970	58.5
Per Cent of Appliance Sales	21.0	52.8	5.0	1.7	3.0	6.0	4.5	6.0		
Grand Total										
All Dealers	20	72	130	350	55	55	80	48		
Value	$2,500	$3,780	$780	$700	$330	$660	$720	$720	$10,190	100.0
Per Cent of Total Sales	24.5	37.1	7.6	6.9	3.2	6.5	7.1	7.1		

CITY V

	Washing Machines	Vacuum Cleaners	Flat-irons	Curling Irons	Toasters	Perco-lators	Small Heaters	Waffle Irons	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores										
Store "A"	20	2	25	50	48	36	18	12		
Store "B"	.....	2	15	25	12	6	5	6		
Total	20	4	40	75	60	42	23	18		
Value	$2,500	$210	$240	$150	$360	$504	$207	$270	$4,441	62.6
Per Cent of Appliance Sales	56.2	4.7	5.4	3.4	8.1	11.3	4.7	6.2		
Contractor-Dealers										
Store "C"	10	8	50	50	24	10	15	12		
Value	$1,250	$420	$300	$100	$144	$120	$135	$180	$2,649	37.4
Per Cent of Appliance Sales	47.2	15.8	11.3	3.8	5.4	4.5	5.1	6.6		
Grand Total										
All Dealers	30	12	90	125	84	52	38	30		
Value	$3,750	$630	$540	$250	$504	$624	$342	$450	$7,090	100.0
Per Cent of Total Sales	53.0	8.9	7.6	3.5	7.1	8.8	4.8	6.3		

one of radio's most recent allies, the phonograph trade, the contractor-dealer evidenced no interest in the radio business.

Although not in the merchandising business the central station is actively promoting electric cookery and 35 electric ranges were sold in the district last year.

Notwithstanding the fact that this city and City IV, previously described, are almost identical in size there was 30 per cent less appliances sold in the latter. This, however, is undoubtedly due to the lack of interest of the general buying public in appliances rather than the inadequacy of the retail outlets.

Electrical Dealers Do 98 Per Cent of Business in City VI

The bulk of the appliance business is being handled by the electrical dealers in City VI where 98 per cent of the appliances are sold by one specialty shop and three contractor-dealers. The only non-electrical outlets in the city are two hardware stores which do 1.7 per cent of the business. But 0.3 of 1 per cent is done by the central station which displays appliances in its district offices and occasionally sells an appliance where a customer expresses a desire to purchase through the power company.

Seventy per cent of the washing machine and vacuum cleaner business is being done by a well organized and well equipped specialty shop, one of a chain of such stores operating throughout this district. The small appliances are carried more as a convenience for the customers of the shop, as a result of which the contractor-dealers are doing the bulk of this class of business. The success of this dealer may be partially attributed to the fact that he recognizes the value of advertising and maintains a large house-to-house sales organization.

One of the three contractor-dealers is a wide-awake merchant and is constructing a new store which will be the equal of anything in the state. His appliance business has been increasing at the rate of 25 per cent a year and as a result of his new store he expects to gain a firmer hold of the business. The remaining two contractor-dealers were ordinary.

Neither of the two hardware stores is actively concerned with the appliance business. Appliances are carried as a convenience for regular customers.

City VI with its 20,000 population is in the center of a rich agricultural district in California. It is growing rapidly.

Wide Variety of Retail Outlets in City VII

The large number and wide variety of retail outlets for electrical merchandise in City VII are apparently responsible for the high per-capita sales in

CITY VI

	Washing Machines	Vacuum Cleaners	Flat-irons	Curling Irons	Toasters	Perco-lators	Waffle Irons	Heaters	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores										
Store "A"	.....	.....	50	100	12	6	12	4		
Store "B"	.....	.....	50	75	10	5	10	.....		
Total	.....	.....	100	175	22	11	22	4		
Value	.....	.....	$600	$350	$132	$132	$330	$27	$1,571	1.7
Per Cent of Appliance Sales	.....	.....	38.3	22.2	8.4	8.4	21.0	1.7		
Contractor-Dealers										
Store "C"	20	80	125	200	40	24	24	18		
Store "D"	50	15	350	175	25	15	10	20		
Store "E"	60	60	250	250	70	24	24	50		
Total	130	155	725	625	135	63	58	88		
Value	$16,250	$8,140	$4,350	$1,250	$810	$756	$870	$792	$33,218	35.1
Per Cent of Appliance Sales	48.9	24.5	13.1	3.8	2.4	2.3	2.6	2.4		
Specialty Shops										
Store "F"	325	340	100	100	24	10	10	.....		
Value	$40,650	$17,850	$600	$200	$144	$120	$150	.....	$59,714	62.9
Per Cent of Appliance Sales	68.2	29.9	1.0	0.3	0.2	0.2	0.2	.....		
Central Station	.....	.....	25	.....	6	5	5	.....		
Value	.....	.....	$150	.....	$36	$60	$75	.....	$321	0.3
Per Cent of Appliance Sales	.....	.....	46.7	.....	11.2	18.7	23.4	.....		
Grand Totals										
All Dealers	455	495	950	900	187	89	95	92		
Value	$56,900	$25,990	$5,700	$1,800	$1,122	$1,068	$1,425	$819	$94,824	100.0
Per Cent of Appliance Sales	60.0	27.4	6.0	1.9	1.2	1.1	1.5	0.9		

this city as compared with others included in this survey. A hardware store, three contractor-dealers, a household furnishing store and a specialty shop sell the bulk of appliances, while a furniture store and a farm implement store sell washing machines and vacuum cleaners.

The specialty shop, one of a chain operating in this section, is doing 45 per cent of the appliance business, chiefly in washing machines and vacuum cleaners. The smaller appliances are carried for the convenience of the patrons of the store but are not aggressively merchandised. The small appliance business is about evenly divided between three contractor-dealers and the household furnishing store, the former doing 23.1 per cent of the city's total and the latter 21.8 per cent. Because of a wide-awake merchandising policy and the important position which this household furnishing store occupies among local retail merchants it is becoming an increasingly important factor in the sale of electrical appliances. Out of an annual gross volume of business running into hundreds of thousands of dollars this merchant spends between 2½ and 3 per cent for advertising.

As was the case in City VI, one contractor-dealer stands head and shoulders above his competitors. This dealer has displayed a marked merchandising ability in that he has recognized the necessity for adding certain non-electrical lines to attract the women shoppers to his store, especially during the holidays. This dealer carries gas ranges, refrigerators, kitchen cabinets, and art gifts, in all of which he is showing a nice profit.

The one hardware store handling appliances is doing 6.4 per cent of the business and has a well stocked department. The furniture and farm implement stores handle washing machines and vacuum cleaners merely as a convenience to their patrons.

The municipal utility supplying the city displays appliances in its offices which are far removed from the retail shopping center of the city and occasionally sells one of the heating devices. The city's policy in the free renewal of lamps has completely demoralized the lamp business in the community. Electric range business has not been flourishing because of the high cooking rates charged by the city.

City VII has a population of 25,000 and is in the center of a rich agricultural and poultry raising region.

Summary

Many interesting side lights and comments were brought out during the course of the surveys. As might have been anticipated, the questions of margin and price came in for their full share of discussion. The majority of appliances carry margins ranging from 25 to 35 per cent with 30 per cent as the average. It was stated that this is adequate for the contractor-dealer but in the case of hardware, house-furnishing and department stores, this margin is not sufficient. More criticisms were forthcoming from the electrical dealers than the non-electrical on this score, despite the fact that the electrical dealers' overhead is from 10 to 15 per cent lower than their non-electrical competitors'. Several hardware dealers remarked upon this fact and stated that there must be a revision in discounts before they would engage more actively in appliance sales.

The proprietor of one large house-furnishing-goods store which does a gross volume of business of $300,000, 10 per cent of which is done by the electrical department, criticized the jobber's price lists. He could not understand why he must pay a higher

CITY VII

	Washing Machines	Vacuum Cleaners	Flatirons	Curling Irons	Toasters	Percolators	Waffle Irons	Heaters	Total Sales Each Class of Store	Per Cent of Total for City
Hardware Stores										
Store "A"	35	25	150	200	75	50	10	25		
Value	$4,375	$1,312	$900	$400	$450	$600	$150	$225	$8,412	6.4
Per Cent of Appliance Sales	52.0	15.6	10.7	4.8	5.4	7.1	1.7	2.7		
Contractor-Dealers										
Store "B"	120	100	300	350	120	120	60	150		
Store "C"	10	5	50	100	12	12	10	15		
Store "D"	2	1	25	75	10	10	5	10		
Total	132	106	375	525	142	142	75	175		
Value	$16,500	$5,570	$2,250	$1,050	$852	$1,704	$1,125	$1,575	$30,626	23.1
Per Cent of Appliance Sales	53.8	18.2	7.3	3.4	2.8	5.6	3.7	5.2		
Household Furnishings										
Store "E"	100	150	500	600	150	125	75	100		
Value	$12,500	$7,880	$3,000	$1,200	$900	$1,500	$1,125	$900	$29,005	21.8
Per Cent of Appliance Sales	43.1	27.2	10.3	4.1	3.1	5.2	3.9	3.1		
Furniture Stores										
Store "F"	10	20	.....	.....	.....	.....	.....	.....		
Value	$1,250	$1,050	.....	.....	.....	.....	.....	.....	$2,300	1.8
Per Cent of Appliance Sales	54.4	45.6	.....	.....	.....	.....	.....	.....		
Farm Implements										
Store "G"	12	2	.....	.....	.....	.....	.....	.....		
Value	$1,500	$105	.....	.....	.....	.....	.....	.....	$1,605	1.3
Per Cent of Appliance Sales	93.5	6.5	.....	.....	.....	.....	.....	.....		
Specialty Shops										
Store "H"	340	300	100	100	25	12	13	.....		
Value	$42,500	$15,750	$600	$200	$150	$144	$180	.....	$59,524	45.0
Per Cent of Appliance Sales	71.5	26.5	1.0	0.3	0.2	0.2	0.3	.....		
Central Station*	.....	.....	50	50	12	12	5	10		
Value	.....	.....	$300	$100	$72	$144	$75	$90	$781	0.6
Per Cent of Appliance Sales	.....	.....	38.4	12.8	9.2	18.4	9.6	11.6		
Grand Totals										
All Dealers	629	603	1,175	1,475	404	341	177	310		
Value	$78,625	$31,667	$7,050	$2,950	$2,424	$4,092	$2,655	$2,790	$132,253	100.0
Per Cent of Total Sales	59.6	23.9	5.3	2.2	1.8	3.1	2.0	2.1		

*Municipal Distribution System.

price for appliances in lots of 6 than in lots of 100, especially when he did business on a cash basis and was one of the largest outlets for appliances in his city. He made a plea for a unit-price basis of purchasing in the case of well established firms such as his own.

Electrical dealers in small towns which were wholesale distributing centers for the districts in which they were located, felt that the practice of allowing hardware or department stores in such cities jobbing prices because they acted as distributors was unfair. One dealer stated that his chief competitor, a hardware store, was able to sell appliances as cheaply as the dealer could purchase them from his jobber.

The question of servicing appliances is not as important as some manufacturers and jobbers have believed. Non-electrical outlets which sell a large volume of appliances have either installed servicing departments of their own or have made arrangements with the manufacturer's service stations in nearby large cities to service appliances for them. The plea that contractor-dealers must exist if for no other reason than to service appliances was denied. While non-electrical outlets may not have performed this task as readily as they should have in the past, they are awakening to its importance and are taking steps to remedy this weakness.

From the standpoint of the jobber the survey brought forth some important comments. The same men who criticized the jobbers' discounts made the statement that in the past the jobbers, in their zeal to get new business or to enter communities where they had no distribution, have been prone to grant too liberal credit to dealers desiring to enter business. When these dealers failed, as they have in many instances, they stated that the appliance selling situation in that particular community was disrupted for months.

The proprietor of a hardware store which was doing the greatest portion of appliance business in one community stated that the electrical jobbers must improve their service if they expect to hold the trade of such establishments as his. Where a hardware salesman calls upon him once or twice a week, the electrical jobber's salesman made but one call in four or six weeks. This dealer believes that if the electrical jobber is to get and to hold the business of the non-electrical outlets he must make his service so valuable that the non-electrical dealer will prefer to do business with him.

In localities where the central station is merchandising the bulk of the appliance business is still passing through electrical channels. This also holds in those cities where the central station was not merchandising but where there was a specialty shop which was setting the pace as the central station might have been doing. There was little criticism against central station advertising. In one city where the power company had announced its intention of merchandising and had then been forced to curtail its efforts because of a power shortage the dealers were almost unanimous in their belief that they would profit from the increased public interest in appliances due to the merchandising efforts of the power company. Most of the criticisms against central station merchandising came from the contractor-dealers.

The dealers in two southern California cities reported that the power shortage has had little effect on appliance sales.

The practice of purchasing appliances wholesale for employees indulged in by some power companies aroused a great amount of criticism. One dealer stated that the practice had been extended until the purchasing department of this particular company was buying furniture and automobile tires at wholesale prices for its employees and even for their friends.

Of interest to the manufacturer of appliances was the crying need expressed by many of the merchants for medium priced, reliable, guaranteed lines. One merchant stated that the grades of appliances on the market today could be classed as standard, sub-standard and inferior. The inferior grade will not last long in his belief because the public will not accept inferior articles. The prices on the standard lines are still too high, he stated, and the manufacturers who have recognized this and are bringing out the lines he classed as sub-standard are reaping the harvest.

The contractor-dealers who were making a success in the cities surveyed are those who have realized that electrical appliances alone are not sufficient to maintain a store in a downtown shopping area. One dealer had successfully added a line of phonographs and was showing a nice profit on them. Another had added gas ranges, refrigerators, kitchen cabinets and a line of art gifts especially attractive to the woman shopper. His volume of appliances had doubled since this step was taken, he stated.

The opinion was prevalent especially among the non-electrical outlets that the contractor-dealer is becoming a decreasingly important factor in the distribution of appliances. It was admitted that he was necessary; that he would always exist because wiring must be done and fixtures must be sold; that he would carry a line of appliances for the convenience of his wiring and fixture customers; but that he would not continue to sell the volume of appliances that he had in the past.

Conclusion

It is apparent from even a cursory examination of these surveys that the distribution of electrical appliances is in a highly transitory state. A natural upheaval is taking place, just as it has in the distribution of other lines of merchandise, and signs point to the fact that upon the conclusion of the present period of transition, appliance distribution will be upon a more stable plane with electrical merchandise reaching the consuming public through those channels which have the proper merchandising ability and experience. The central station will still continue to merchandise those lines which require pioneering; the contractor-dealer will have an important place in the picture; but the bulk of appliance selling will be done by the outlets which today are merely "breaking in."

The Value of an Outlet to the Electrical Industry

By E. W. Day
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THE initial return from one outlet added to a single installation amounts to very little. When the returns from one outlet added to over three hundred thousand installations are considered over a five-year period the results are staggering. In this article Mr. Day, after giving careful attention to the many contributing factors, has pictured what the outlet means in dollars and cents to the entire industry.

VITAL statistics tell us the number of persons in each thousand of population who die each year, the number who will die next year and the various causes of their death. In spite of the uncertain life tenure of the policy holders, here is a business that has been practically reduced to an exact science.

In the past decade business men have been learning that volume of sales as between any given periods of time is not necessarily indicative of the progress or lack of progress made. For example, if some one tells us that his business has increased 10 per cent over that of the previous year it does not necessarily imply a definite progress. If the statement is qualified by the additional observation that this increase was made in the face of a 10 per cent decline of business in general we are then able to draw a sound conclusion as to the relative progress made. However, a 10 per cent decline in the volume of a particular business in relation to a 30 per cent decline in general business activity is relatively as favorable a performance as the one previously cited.

To determine the progress of an industry, or that of any individual retailer, wholesaler, or manufacturer in that industry, it is equally necessary to establish some unit of measure. This unit is difficult to determine in the case of some industries and comparatively easy in others, but in all cases it is first necessary to develop all the available facts and to reduce them into an expressible, definite, constant and adaptable unit.

The Outlet the Unit of Measurement

In the case of the electrical industry the unit is obvious—it is the outlet. Every outlet installed represents a definite and cumulative value to all factors of the industry; to the contractor-dealer, to the jobber, to the manufacturer and to the power company. While this is obvious the statement is too general satisfactorily to visualize just what influence each electrical outlet has in determining the scope of the electrical market, whether that market be national, divisional or local. Naturally, it will be conceded without argument that a complete electrical installation as compared with one which meets only minimum lighting and service requirements adds materially to the present and potential income of the various factors of the industry. The power company benefits by a larger monthly income from a complete installation and the contractor-dealer profits by reason of immediate and future appliance sales which in turn are transmitted to the jobber and to the manufacturer. But approximately what money value does each outlet represent to the industry and to the component elements of the industry?

For the analysis of the outlet we shall take the Pacific Coast—the states of California, Oregon, and Washington. This selection is made (1) because the conditions surrounding electrical consumption on the Coast vary considerably from those found in other parts of the United States and (2) because by limiting the area covered by the analysis a more specific conception of relative values may be secured.

Now to marshal the facts—but before entering upon that analysis let us agree as to what is a fact. We are inclined to consider a fact as a constant and definite quantity such as twice two are four. But what we consider facts are such only in combination with variable facts and near facts. There is probably no such thing in business as a 100 per cent fact. But this by no means suggests that the use of information which is not mathematically exact is neither useful nor safe. Business is primarily concerned with relationships as opposed to differences. All standards of measurement are purely arbitrary and are established by the government, the state, the municipality or by common usage and consent. The yard stick is therefore nothing more than a purely arbitrary unit of measure. Should you deside to consider 27 in. as a yard and upon that basis compare the length of your desk with that of your shop you would find the relationship between the two to be the same as though you had used the accepted standard of 36 in.

It is immaterial therefore whether or not the results developed by this analysis are 10 per cent plus or 10 per cent minus in terms of 100 per cent accuracy—the fact that we are establishing a yard stick for the electrical industry coupled with the fact that neither the Journal of Electricity nor the writer are attempting to prove a predetermined premise by the manipulation of figures is sufficient basis for assuming a reasonable approximation to true relative values.

Basis for Analysis Defined

The basis, of course, for the analysis of outlets must be predicated upon an actual study of electrical installations over a period of time sufficiently prolonged actually to establish the trend of performance. In addition the analysis must be based upon the individual performance of two distinct groups of contractors. For lack of a better definition these two groups may be classified as "qualified" contractors and "casual" contractors.

In explaining this segregation it seems desirable to add that averages, unless they are typical, are deceiving and therefore dangerous as a basis for drawing conclusions. While the average of 25 and 75 is 50 there is certainly nothing in the average indicated to convey a conception of the range of variation involved. On the other hand, if this same figure 50 represents the average of 48 and 52 we may say that the average figure is typical. Thus, while the general average of performance on the part of all electrical contractors may indeed develop a so-called average of performance, it is desirable further to examine the figures in order to arrive at typical averages.

In every business there are always two broad classifications of individuals or concerns involved. One group comprises those who are financially responsible, whose investment in merchandise is in an accepted ratio to their volume of sales and who deliver standard merchandise at a fair profit. The other group is made up of those of limited or no financial status who have been drawn into the particular business either by reason of economically favorable circumstances or out of the necessity of making a livelihood at a trade with which they are familiar.

What Happens When the Standard Falls

In the case of the electrical industry on the Pacific Coast the general depression of 1921 led many electricians who were out of employment to start out for themselves. Their sole basis of operation was from the standpoint of price. Having secured a contract on this basis it was reasonable to expect them to seek every means to keep down installation costs, and since each outlet installed on any one of their jobs involved a definite expense on their part the purpose was to bid on the lowest possible number of outlets.

In Table I is shown the effect of bids based upon price alone on the average number of outlets installed per job in 1921 as against 1920 in a large Pacific Coast city, and the subsequent increase in outlets per job brought about by educational measures directed at both the public and the trade by those who represent the highest standards of sound electrical merchandising.

It will be noted that the combined annual average of outlets installed per job declined from 13½ in 1920 to 11½ in 1921. Also note the consistent gain which has been made in the averages of both groups since 1921. What the loss of two outlets in each job installed on the Pacific Coast during a year's time meant to the various factors of the industry can be estimated from figures given later on in this article. This loss amounted to a staggering total.

But we are considerably more interested in figuring positive rather than negative problems. We cannot retrieve the past but we can look to the future. It seems obvious that if we can determine within reasonable limitations what the loss of an outlet on a job means to each of us individually and to the industry in general we shall be able to visualize much more accurately its importance than would be the case were aggregate figures to be discussed.

TABLE I

RECORD OF OUTLETS INSTALLED PER JOB

	Qualified Group	Casual Group	Average
1920			
Jan.	14.4	13.1	13.9
Feb.	13.	13.1	13.1
Mar.	13.3	12.4	13.
Apr.	12.3	9.6	11.3
May	17.8	11.	15.8
June	13.	16.8	14.5
July	14.5	10.9	13.1
Aug.	13.5	14.6	14.
Sept.	13.8	13.4	13.6
Oct.	14.2	13.9	14.
Nov.	13.2	13.7	13.4
Dec.	15.1	10.8	12.8
1920 Average	14.	12.8	13.5
1921			
Jan.	10.2	7.6	8.5
Feb.	11.	6.8	8.2
Mar.	15.9	8.3	10.8
Apr.	20.7	8.7	12.4
May	12.3	8.1	9.4
June	15.7	9.7	11.3
July	21.	10.6	13.2
Aug.	21.	9.5	12.2
Sept.	13.6	7.9	9.1
Oct.	17.9	8.1	10.
Nov.	16.2	18.4	17.4
Dec.	14.7	10.6	12.6
1921 Average	15.6	9.6	11.5
1922			
Jan.	14.	9.1	11.5
Feb.	14.8	10.5	12.6
Mar.	16.4	10.7	13.5
Apr.	16	13.1	14.5
May	20	11.2	14.9
June	22.7	9.1	15.
July	18.1	12.	14.7
Aug.	20.6	13.3	16.5
Sept.	15.6	13.9	14.7
Oct.	15.6	11.	13.1
Nov.	16.2	13.1	14.6
Dec.	17.5	13.2	15.2
1922 Average	17.1	11.7	14.2
1923			
Jan.	21.	12.4	16.1
Feb.	19.	13.5	16.1
Mar.	21.9	14.5	17.8
Apr.	21.2	14.1	17.3
May	18.7	14.4	16.4
June	22.2	16.9	19.4
July	20.7	14.2	17.3
Aug.	17.9	16.6	16.7
Sept.	17.2	14.6	16.2
Oct.	15.4	12.2	13.6
Nov.	15.5	12.4	13.9
Dec.	20.	15.3	17.5
1923 Average	19.4	14.5	16.8
1924			
Jan.	20.3	13.4	16.5
Feb.	17.6	14.4	15.7
Mar.	18.9	14.8	16.4
Apr.	21.3	14.9	17.7
May	23.4	14.9	18.7
June	18.4	13.7	15.8
6 Mos. 1924, Avg.	20.	14.4	16.8

To intimate to an electrical contractor-dealer that his failure to make complete installations in every instance, coupled with a like failure on the part of his contractor-dealer brothers, has cost the industry as a whole a certain number of millions of dollars in a certain period is too general a statement to carry much weight. The contractor-dealer who is doing a business of ten, twenty-five or even a hundred thousand dollars cannot interpret his relative importance in the industry when we start to deal with millions. When we are prepared to say to an individual con-

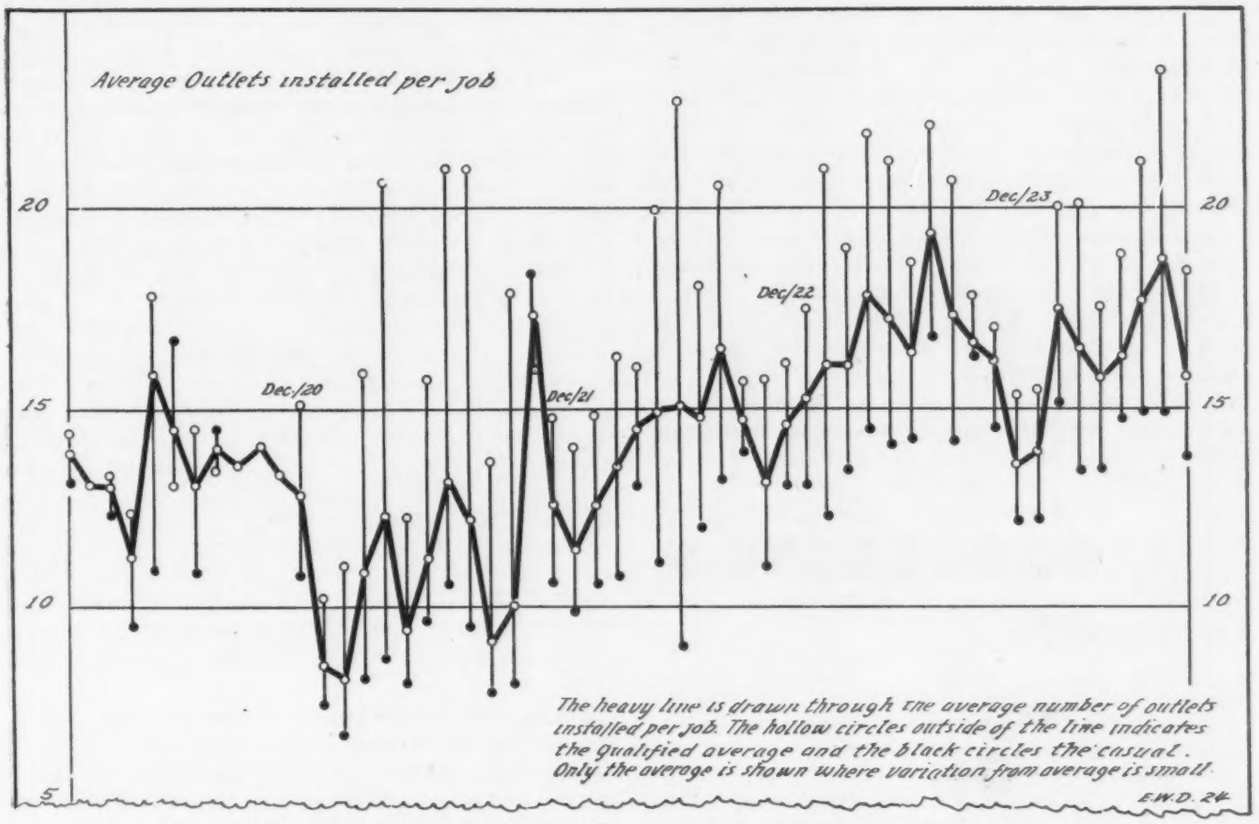

Average Outlets installed per job
20
15
10
5
Dec/20
Dec/21
Dec/22
Dec/23
The heavy line is drawn through the average number of outlets installed per job. The hollow circles outside of the line indicates the qualified average and the black circles the casual. Only the average is shown where variation from average is small.
E.W.D. 24

Fig. 1 showing average outlets installed per job based on analysis of 174,756 installations.

tractor, however, that every outlet which he installs represents a minimum income of so many dollars and cents to himself as well as to the industry in general, we are making a statement which is susceptible of specific application. A contractor-dealer who, for example, has installed a hundred jobs in the course of a year will unconsciously visualize how much greater his profits would have been had he been able to add an average of two, three or four outlets to each of those jobs.

To establish the approximate value of an outlet, it was necessary to develop some reasonably sound premise as a starting point. Thus the original computation was based upon two sets of figures.

The Starting Point in the Computation

The first set of figures has to do with the average cost of wiring homes and the average purchase of appliances per wired home, the wiring estimates covering the retail cost of wiring and fixtures and excluding labor cost. The figures were gathered in a comprehensive survey made by the Electrical World shortly before the value of an outlet was originally established and were secured from a study of the records of twenty-five representative light and power companies. At the same time a detailed study was made of appliance sales by manufacturers. Naturally price trends had to be reckoned with, since any estimates based upon the 1921-22 price levels would serve to exaggerate the final estimates. The estimates arrived at are as follows, it having been assumed upon due investigation that old customers —that is, those whose homes were not wired during the current year—will purchase appliances to two-thirds of the value of appliances purchased by new electric lighting customers during the course of the year:

Year	New Customer Wiring and Fixtures	Appliances	
		New Customer	Old Customer
1924	68.30	$17.30	$11.53
1925	64.90	16.40	10.53
1926	61.60	15.60	10.40
1921	82.00	20.30	13.52

The second set of figures comprising the original basis of computation is not an estimate but covers actual operating figures taken from the records of the public service corporations. These statistics have to do with the average annual kw-hr. consumption of electricity by 270,839 dwelling and commercial lighting customers. The average kw-hr. annual consumption came to 478 while the average annual lighting bill was $34.

With these facts as a basis—and they are called facts since they represent a combination of actual operating records and the best of technical opinion available—the value of the outlet can be established within reasonable limitations. However, before any actual computations are made it will be necessary to examine various contributing and qualifying factors in order that any possible exaggeration of values may be forestalled.

Other Factors Taken Into Consideration

First comes the question as to the time factor in arriving at the approximate value of the outlet.

To estimate this value for the period of one year would not present a true picture of the outlet-value to the various elements of the industry since the contractor-dealer naturally secures the bulk of his profit at the time of installation, while the power company continues to receive an approximately constant return from the installation year after year. In order to equalize this feature, a period of five years has been selected. Some might select a three-year or a seven-year period. Such selections would, of course, alter the income relationships. The fact remains, however, that some arbitrary unit of time must be assumed and the five-year period seems as logical as any other one.

While electrical statistics as regards dwelling installations are sufficiently complete to lend themselves to sound conclusions, the statistics of industrial installations are principally in terms of installed motor horsepower and are therefore not susceptible to interpretation into terms of outlets. Figures covering commercial lighting installations are entirely lacking so far as practical purposes are concerned.

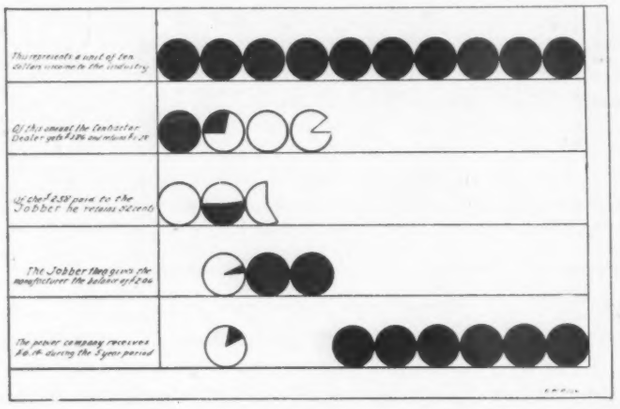


Fig. 2 showing distribution of each ten dollars of gross income to the various factors of the electrical industry.

It is presumable, of course, that the unit cost of wiring and equipment per outlet in the average industrial installation runs considerably in excess of the unit cost for wiring and fixtures in dwelling installations. In round numbers, however, there are only about one hundred thousand industrial power customers on the Pacific Coast while there are considerably over a million residential lighting customers, so that the relative importance of the industrial installation is less than ten to one. It may also be assumed that the unit cost per outlet in commercial installations does not exceed that of domestic installations by any considerable extent, which fact serves to cut down the relative importance of the industrial installation to probably as small as one to twenty. Since we are seeking to establish a conservative value for the outlet, the industrial phase of the problem does not particularly affect the final figures. Those contractors who are doing both residential and industrial work and who may be interested in arriving at the relative installation costs and profit per outlet can readily establish the relative profit-weight of the industrial outlet by using the approximate value as established for the residential and commercial outlet.

With respect to the estimated power company income, it is not reasonable to assume that with an average annual income of $34 and an average of 11½ outlets per installation that the resultant income of $2.96 per outlet would increase in direct proportion to the number of outlets installed. Naturally, as between a completely wired and partly wired job, the power company would receive a larger annual income from the former but not necessarily a larger income per installed outlet. In addition, since the records show that the average number of outlets installed per job during 1921 was lower than in previous years, and since a large proportion of the consumers on the power company lines were old customers, we cannot properly assume that the average of installed outlets was only 11½. While the available records of outlets installed per job prior to 1921 do not show a higher annual average than 13½, we will assume in the interest of conservatism that these 270,839 lighting customers had an average of 14 outlets each. The annual revenue of the power companies per outlet will therefore be reduced to $2.43.

The sum of $68.30 per installation for wiring and fixtures has already been mentioned as the average dwelling estimate for 1924. In relation to appliances, however, we must assume that appliances will be sold for residential use rather than commercial use. While it is true that commercial lighting customers do use appliances of various types we cannot arbitrarily pro rate the appliance figures on a 100 per cent basis to all installations. The most reliable data available indicate that approximately 50 per cent of construction on the Pacific Coast, in terms of units of course, is in the erection of dwellings. No figures are available as to the use of appliances in commercial installations but those familiar with electrical development on the Coast seem generally to agree that if the relative importance of appliances is placed at 65 per cent no exaggeration will result. In other words, we first assume that no appliances are purchased by commercial customers. We next assume that 65 per cent instead of 50 per cent of all electrical installations are in dwellings. By basing our computation of appliance sales on the 65 per cent average rather than the 50 per cent figure the failure to include commercial customers as appliance purchasers is equalized. This is a much simpler method and equally as satisfactory as one that attempts to secure a separate analysis of commercial requirements for electrical appliances, since the latter process would be involved and would hold out no promise of greater accuracy.

Returns to Contractor-Dealer and Power Company

We are now in a position to set up the first series of figures, since we have examined both the contractor-dealer factor and the power company factor.

The appliance figures are calculated in this way: According to the estimated 1924 appliance purchases of new residential lighting customers, they will buy

Segregated Income from an Average Electrical Installation

Wiring and Fixtures:	1924	1925	1926	1927	1928
Contractor-dealer	$68.30				
Power Co. Income per job	$34.00	$34.00	$34.00	$34.00	$34.00
Appliances:					
Contractor-dealer	11.24	6.95	6.76	6.76	6.76

appliances during this year which will average $17.30. Using our factor of 65 per cent as just explained reduces this figure to $11.24. The 1925 appliance estimate is $10.53 and 65 per cent of that amount is $6.95. The 1925 estimate is $10.40 and 65 per cent is $6.76. It is assumed that there will be no further downward trend in appliance prices subsequent to 1926 which would be sufficient to disturb the general average of 1926, so that the last two years are estimated as being constant in relation to 1926. Combining the value of wiring and fixtures with that of appliances we reach our first definite value of an average installation to the contractor-dealer and to the power company.

Total Income from an Average Electrical Installation

	1924	1925	1926	1927	1928	Total
Cont.-dealer	$79.54	$ 6.95	$ 6.76	$ 6.76	$ 6.76	$106.77
Power Co.	34.00	34.00	34.00	34.00	34.00	170.00

Returns to Jobber and Manufacturer

The next step in the analysis is to determine what proportion of the $106.77 received by the contractor-dealer goes to the jobber and in turn what amount the jobber turns over to the manufacturer.

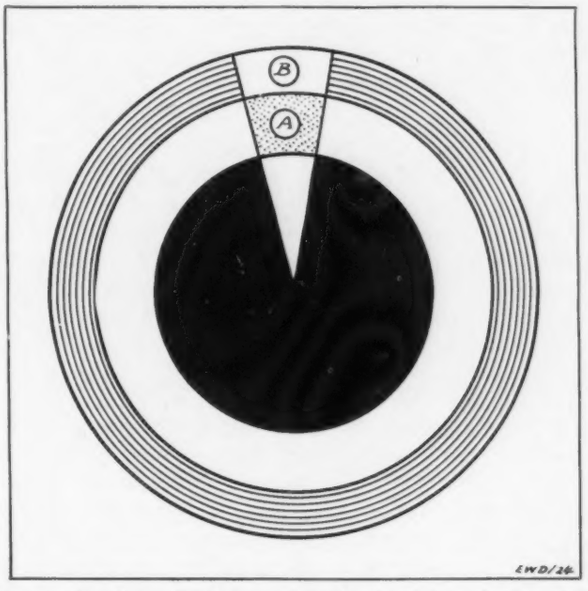


Fig. 3 showing effect on contractor-dealer's volume when electrical market is expanded. White sector shows volume when market is black circle, sector A shows potential sales when market is expanded to area of white circle. Further expansion would add volume B to potential sales.

This is not difficult to determine since the operating statistics of jobbers and manufacturers in general are, with few exceptions, no longer treasured secrets to be whispered behind barred doors.

Naturally, the price differential varies with the different types of merchandise, but taking a weighted average, that is, giving each classification its proper weight as determined by its relative importance in terms of volume, it will work out something like this: If a contractor-dealer in a five-year period receives the sum of $100 for wiring, fixtures and appliances in connection with a particular job (not including labor costs) the distribution will be approximately as follows:

Contractor-dealer receives	$100.00	
Pays the jobber	66.67	
Contractor-dealer retains		$33.33 or 33-1/3% of $100
Jobber receives	66.67	
Pays the manufacturer	53.34	
Jobber retains		$13.33 or 20%
Manufacturer receives	53.34	

The Five-Year Value of an Outlet

Applying these differentials to our base table we secure the following distribution of income over a five-year period, the figures covering wiring, fixtures, and appliances on the average installation:

	Job	Per Outlet	
Contractor-dealer	$106.77	$7.63	$7.63
Jobber	71.22	5.09	
Manufacturer	56.98	4.07	
Power Company	170.00	12.14	12.14
Value per outlet for five-year period, based on 14 outlets per job			$19.77

It is interesting to note the effect of price variations upon the final value of the outlet. At the time this value was first established it was $20.60 so the present figure represents a decline of a little over 4 per cent in less than two years. Based upon the estimated figures given the average five-year value of an outlet during the next few years should not decline below $19.

Number of Outlets Has Increased

As has been shown, the number of outlets installed per job has increased from 14 to practically 17. This net gain of three outlets is not equal, however, to $19.77 multiplied by 3 or $59.31, since it cannot be arbitrarily assumed that each added outlet will yield the same return of $2.43 to the power company. Conservative estimates indicate that if the five-year return to the power companies from a 14-outlet installation totals $170 the return from a 17-outlet job would be approximately 16 per cent higher, or $195 in round numbers, or $11.47 per outlet over the five-year period. On this basis the gain to the industry as between a 14 and a 17-outlet job would be the difference between $276.77 and $324.71, or $47.94 and not $59.32 as would be the case were it assumed that the fixed ratio of income to the power companies would be $12.14 irrespective of the increase in the number of outlets.

This sum of $47.94 gain per job does not impress one greatly unless we seek to establish what this represents to the industry on the Coast. Building statistics covering the Pacific Coast are frag-

mentary excepting as applying to certain specific areas and none of the agencies that study and report periodically upon building activity in the United States have extended their reports to include the Coast. However, this fact need not prevent our reaching certain definite conclusions regarding building activity in the Pacific states.

Building Activity Must Be Considered

A casual glance at the fluctuation in general building activity in the United States in the past two decades will at once impress us as a typical example of the business cycle which we hear so much about. With the line of normal building activity established as a base, the fluctuations of activity above and below that line since 1905 practically equalized each other until the period of the war. Building operations then declined consistently to the point of practical stagnation. The phenomenal activity which later swept the country could have been predicted several years before it took place and estimates place building operations at from 15 to 35 per cent above normal for some years to come.

The index number of building activity for November, 1921, is placed at 100 (normal). While this index number applies to the country generally we must start from some basis and certainly no other is more acceptable. The number of building permits issued during the month of November, 1921, in various cities in California, Oregon and Washington totaled 9,856 and the population of those cities constituted 45 per cent of the total population of those states. Building permits are of course open to question on the score that the taking out of a permit does not necessarily imply actual construction but the volume of permits issued in a given period does indicate the trend of activity.

From a mathematical standpoint, if 9,856 permits represent 45 per cent of a given population (the actual figure is 44.85 per cent) then 21,975 permits represent 100 per cent. And if 21,975 represents the approximate number of permits issued on the Coast during November, 1921, the estimated number issued during previous and subsequent months can be approximately determined by using the government index numbers for those months. The application of these index numbers to the building permits is a purely mechanical process and need not be shown here. The results, however, indicate a total of 250,000 new buildings of various types planned and constructed during 1921, which implies at least 200,000 electrical installations. The use of 80 per cent as a measure of electrical jobs installed is low for a section where the use of electricity is general.

Carrying the analysis into 1922 the application of the index figures produces a total of 345,000 building permits, and applying the same 80 per cent for electrical installations, produces a total of 276,000.

Index numbers for 1923 carry the total of permits to over 475,000 or an average of nearly 40,000 monthly. This figure would represent a minimum of 380,000 electrical installations for the year. This is a conservative figure as estimates by those identified with the industry have placed the total of electrical installations made on the Coast during 1922 as high as 400,000, or 45 per cent higher than the figures given here.

As is always the case with intense building activity, rising costs eventually lead to a withdrawal by the speculative builders with a consequent fluctuation in the number of permits issued. It is unnecessary, however, to attempt to trace the variations in building operations or to seek to establish any hypothetical conclusions as to what level future building operations will maintain above normal. We can be certain of at least one thing and that is that electrical installations on the Pacific Coast will total at least 380,000 annually for some time to come.

More Outlets and Increased Business

The difference between 380,000 electrical installations at an average of 14 outlets each ($276.77) and the same number at an average of 17 outlets each ($324.71) means an added income to the industry in three states alone of over eighteen million dollars in five years. And of this amount the contractor-dealer will have approximately six million dollars with which to carry his operating expenses and make his profit after settling his accounts with the jobber.

While the figures included in this discussion cannot be dignified by the term of "statistics" they were not manufactured to suit the occasion. On the contrary the conclusions reached are the results of over three years of continuous study and observation during which time a total of 174,756 individual electrical installations have been examined and recognized authorities consulted as to the approximate accuracy of the conclusions.

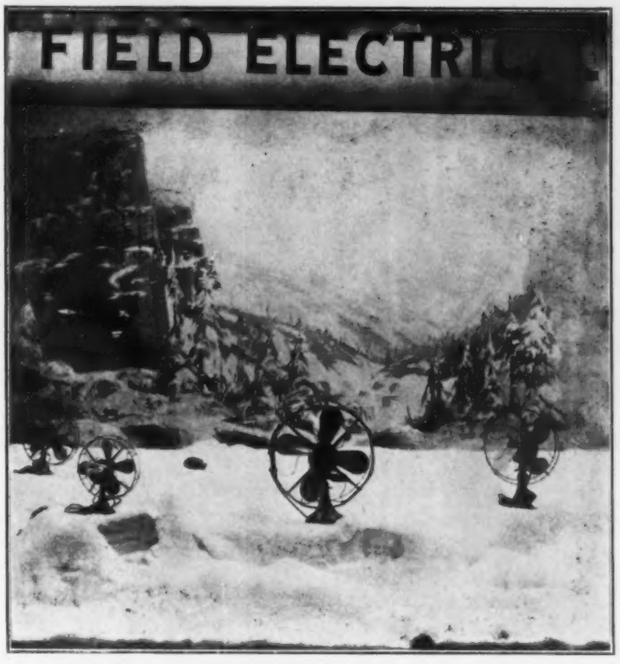
Value of the Outlet Goes Beyond the Present

The contractor-dealer should definitely bear one thing in mind. The value of the outlet goes beyond the immediate problem of contracts closed and net profit—which is of course essential for successful operation. But let each contractor remember that every time he is induced to make an electrical installation without providing a sufficient number of outlets to make possible, and readily possible, the convenient use of appliances, he is definitely restricting his market in the community. He may secure a certain contract by eliminating some of these essential outlets and secure a small and temporary profit. But when he does this he is jeopardizing his chance eventually to gain the larger profits accruing through the sale of various appliances which might be sold to this particular customer. It is conceivable that there is no certainty that the contractor who makes the original wiring installation will secure the appliance business of that particular customer, but the law of averages comes to his rescue. Take any community where the number of outlets is inadequate in the average installation and you will find a restricted market for appliances, wiring devices and fixtures. And a market of this nature when once choked by those whom it would support is not as easily expanded as the market for the average commercial commodity.

Selling More Merchandise Through Better Window Displays

By George L. Black
Field Electrical Company, San Bernardino, Calif.

BELIEVING that there is much more to the art of show window decoration than is commonly practiced, about two years ago I began to run a series of experimental window displays for the Field Electrical Company of San Bernardino, Calif. The results of the first twelve months of these experiments were published in the Feb. 15, 1923, issue of the Journal of Electricity and in the issue of July, 1923, of Electrical Merchandising. These experiments proved so successful that I have continued them up to the present date. Prior to these tests,



Fan display which was presented when the daily temperature averaged 98 deg. F. Epsom salts crystals were used to frost the windows.

in common with a great many others in the electrical industry, I considered the show window as a necessary evil and gave very little thought to it; in fact, I had never dressed a show window before. At the time that I made up my mind to experiment with window decorations merchandise sales were not what they should be so I started to investigate the cause and found that our windows were being dressed whenever the spirit moved some member of the sales force to do so.

After many discouraging attempts to get results, I decided to conduct a few experiments. I first made a check of the number of pedestrians that passed on the two sides of the street and the result of this check showed 32 to 1 in favor of the opposite side of the street. This ratio at the end of the first twelve months' experiment was 2.6 to 1 in favor of the opposite side of the street and twenty-four months after the first of the new window displays was installed, the ratio was 1.5 to 1 in favor of the opposite side of the street. The next step was to make a check of the number of people that stopped to look at our windows. At the beginning of this experiment 16.2 per cent of those who passed stopped to look. The present average is 63.8 per cent. As a careful check showed that 85 per cent of those who stopped were women, an effort was made to build the displays to appeal to the housewife.

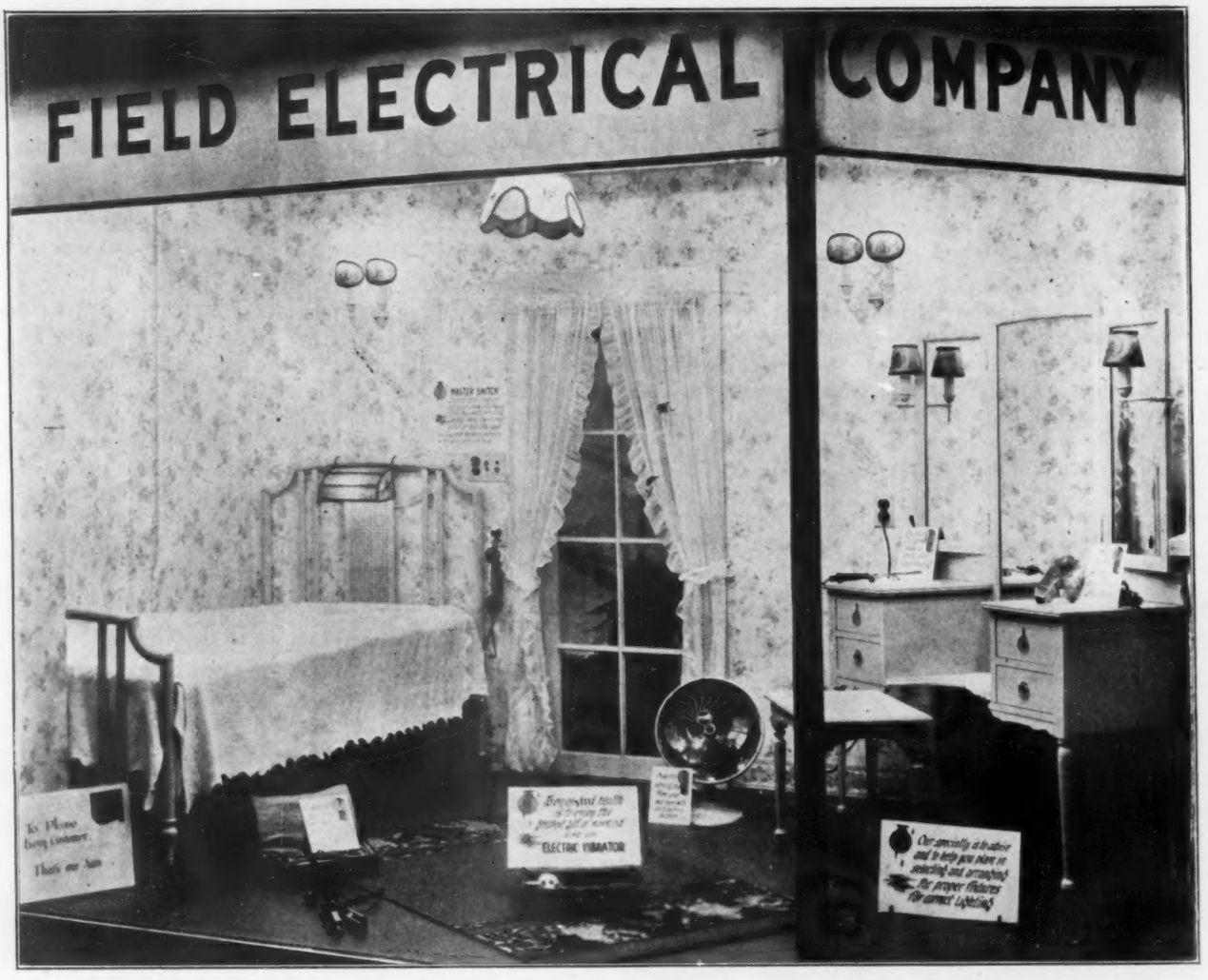
Adapting the Windows to the Display

When I started to change the character of our window displays I was confronted with the same problem that about 90 per cent of the dealers have; namely, the windows were not adaptable to merchandise varying in size from an immersion heater to an automatic range. It is this handicap that I have tried to overcome. My first move was to tear out the permanent background and floor of the window, and when this was done I extended the window ceiling back into the store a distance of 8 ft. from the glass line. The next step was to have a floor built in sections so that the size of the window could be varied. This floor is supported by saw horses, of which there are three sets of different heights to permit the elevation of the floor to suit the display.

When the floor is elevated above the base line of the plate glass, a velvet lined box is used under this floor with the open side facing the glass. This box runs the full width of the window and serves as a mask for the under side of the elevated floor and as a display case for small appliances. The box, which is lighted with tubular lamps controlled by an automatic effect machine, also may be used for producing optical illusions such as causing a coffee pot to change to a percolator. The floor is covered with sectional pieces of linoleum imitating hardwood. The advantage of this floor covering over genuine hardwood is that it enables the decorator to bore holes or drive nails in his floor for mechanical displays and when the linoleum is damaged it may be replaced for a few dollars.

Window Furnishings Are Used

For the background I use a set of scenes, which are constructed of sections of wall board 4x8 ft. nailed to stout frames. These frames are constructed in the same manner as those used for scenery in a theater with the addition of a tongue on one side and a groove on the other. With this type of joint no other support is necessary. The frame is covered on



Master switch and other electrical conveniences were featured in this bedroom display which attracted much attention.

both sides with wall board giving two scenes to one set of frames, and the frames are periodically repapered at a cost of about $5 with remnants of high grade paper secured from a local paperhanger. A French door, a common door, a window and a mantel were constructed to scale for these scenes. The mantel was built by a local sheet metal worker at a cost of $12 and was finished to imitate glazed brick. When the mantel is not in use in the window it is used in the fixture sales room. We have four sets of drapes for our doors and windows and the total cost of all of the above equipment was $86.

When a semi-open background is desired we use a set of decorative panels. We also have three painted backdrops which we use at the rear of the scenes to back up the windows and doors. These backdrops enable us to contrast a cozy lighted interior with a moonlit exterior.

Special Lighting Equipment Is Used

The lighting equipment for the window has been given particular attention. Next to the glass, running the full length of the window, is a Lightkraft reflector and above the window ceiling there are three rows of X-Ray reflectors spaced on 12-in. centers. There is an opening cut in the ceiling, covered with frosted glass, under each reflector. In order that maximum flexibility for working out effects may be secured, the reflector circuits are wired with an independent switch leg from each reflector to the effect machine. A border light and footlight strip for lighting the back drop have been installed as well as a spot light and three X-Ray flood lights. To facilitate the hanging of fixtures five Elexits have been placed in the ceiling and convenience outlets have been provided for by the installation of three circuits for this use. The location of these outlets is constantly being changed to suit conditions. The scenic lighting effects are produced by a motor-driven effect machine of my own invention. This machine is equipped with dimmers, flashing devices and speed controls for mechanical effects and it is possible to procure one hundred and twenty-six different effects with it.

Considerable thought was given to the furnishings for the interiors that were to be used in the experiments and by cooperating with a local furniture company a satisfactory arrangement was made. This furniture house supplied the furniture without cost, even going so far as to order special pieces for

TYPICAL window displays of the Field Electrical Company of San Bernardino, Calif. The display shown at the lower left was presented during Health Week which was recognized by the mayor of the city. The window tied in with a national campaign appearing simultaneously. The other illustrations demonstrate how the company told the public of the advantages of the modern electric home. Each of these special feature displays was maintained in the window for one week.

the display work. During the time that the furniture was in the display window salesmen were instructed to quote prices and answer all inquiries concerning it. As a result of this several pieces were sold directly from the window. The furniture people were so well pleased that they have offered the Field Electrical Company the use of one of their windows for displaying appliances in conjunction with their furnishings.

Modern Home Portrayed in Windows

With this background equipment and the furniture from the local dealer I determined to inaugurate a series of window displays depicting various rooms of a model electric home. Each display was left in the window a week and created a substantial gain in the sale of the merchandise displayed. The average increase in sales for the entire series over the same period in 1923 was 36 per cent and it was noted that 23.6 per cent of our customers referred to our windows when making purchases.

The sales results from the windows have also been very satisfactory. Two displays—those depicting the model bathroom and the model kitchen—sold 84 wall type air heaters, 42 electric water heaters, 42 electric ranges and 42 electric refrigerators to one person for a new apartment house. The owner noticed these conveniences in our windows and had us call upon his architect and cooperate with him in the writing of the specifications for these appliances. We also made a substantial gain in immediate sales of these appliances.

The power of the show windows was also reflected in the activities of other merchants in San Bernardino. Prior to the time that the feature displays were put in our windows the store rooms on our side of the street had been occupied by non-merchandisers. As a result of our windows changing the traffic from 32 to 1 in favor of the opposite side of the street to 1.5 to 1 a dry goods store, a florist, a restaurant and a confectionery have moved to these locations on our side of the street. The confectionery was the last one to move and when the owner was asked why he selected the location he stated that he was a stranger to the city and that at first he had been attracted to the block by our show windows. After a careful check he found it to be the most desirable location in the city. The increased desirability of the block has naturally increased rents which have gone up 50 per cent in twelve months.

Detail Important in Displays

I have had a number of people tell me that I spend too much time on detail and that the passing public never pays any attention to detail. I have proved to my satisfaction that the public does pay attention to detail. Here are a few examples of trials that I have made to test the public's ability to detect incongruities in the displays. Take, for instance, our radio window which contained the wax figure of a woman. When this figure was placed in the window I noticed that her neck was dirty. The dirt was left on her neck and she was placed so that it was difficult to see the back of her neck. The first day the window was shown to the public eighteen customers called our attention to the fact that the lady's neck was dirty. A little over a year ago I installed a forest scene in our window which was labeled Arrowhead Woods. I was short of native pine cones for the display so I used a few cones from the Giant Sequoias. Thirty-eight persons called our attention to the fact that the Sequoias were not natives of Arrowhead Woods. In a dining room display I purposely misplaced the salad forks. So many people called our attention to this error that we were forced to correct it on the second day.

The Psychology of Window Displays

The electrical industry has applied scientific precision to everything except its show windows. The psychology of window displays is capable of analysis and if one studies and experiments with different types of displays he will find that the following fundamentals are correct for most localities. Window displays cannot be subjected to simple unvarying rules, but there are certain underlying principles that must be observed. When starting to dress a window, try to think of the complete result as a picture. Pictures are the most universal language known to mankind for they are comprehended by all races and are the oldest known method of conveying a thought. The store front serves as a frame for the picture. The background is the canvas and the pieces of merchandise are the pigments. Make every display a living, breathing picture full of human appeal.

The primary aim of the show window is to bring the customer into your store. Therefore the display should create a demand through the power of suggestion. A billboard or newspaper advertisement may attract attention and create a desire for possession but the goods must be shown before the sale is made. Talk to your customer in a language that he understands, whether it be vocally or through your show windows. Build your displays to appeal to your trade. A display may be a work of art and still be a poor display because it has no definite message or because it directs its appeal to the wrong class of people. It is a woman who benefits the most from the use of electrical appliances. Therefore the appeal should be directed to her. However, it is well to remember that a man often makes the purchase or determines whether a purchase shall be made. To sell the woman emphasize the comfort and convenience to be had from the particular article displayed. To sell the man emphasize the time and labor-saving features. Direct a strong appeal to man's greatest emotion, namely, affection for his mate or parent.

Suggestions for Better Displays

Make your layouts in advance. Every display should be analyzed and planned before starting the work. When you run across a good idea make a note of it and file it for future reference. Arrange your file so that you will have a section for each month in the year. This will enable you to select a seasonal display without searching the entire file. Read

every page of your trade journals. This means advertising pages also. I consider the advertising pages the most important matter in any trade journal. Don't overlook any idea. Oftentimes a mediocre idea suggests a good one. Read home magazines such as Good Housekeeping, Ladies' Home Journal, etc. They help you to get the woman's point of view as most of the material in these magazines is written by women. Make a show window calendar showing the dates of important local and national events. Make a list of suggestions for show cards and file these alphabetically. Borrow ideas from other industries. Solicit ideas from your customers for your windows for it will cause them to feel that you place a high value on their opinions and will often supply you with some good ideas.

Feature One Article at a Time

Don't try to make a three-ring circus out of your show window. Give one act at a time and the results will be better. A window crowded with merchandise or decorative effects only serves to confuse the onlooker. The difference between a poor display and a good display is a window full of merchandise in the first case and a window filled with merchandise mixed with brains in the second case. Always display merchandise as nearly as possible in the way it is to be used. Never show an article where it is unrelated to the dominant idea of the display. Get away from the commonplace if you expect to get the most out of your windows. However, you should avoid freakish displays. Decorative effects and background are only a means to an end. The background and decorations should call attention to the merchandise, which should be placed so that each individual item is a feature attraction. The improper showing of merchandise will cause the loss of many sales. Every display should have a definite message forcibly portrayed. Make every change so apparent that it will be noticed even from a distance. Make your show cards, decorative ornaments and so forth, in harmony with the scene as a whole.

Make every display arrest the attention of the passer-by. However, care should be taken in the method used in arresting their attention so that the reaction which follows is not one of disappointment. There are certain types of displays known as curiosity displays. One of this type should appeal to the shoppers' curiosity the moment they see it, thus causing them to investigate further. But when they do investigate give them value received for the trouble to which you have put them. Don't trifle with the public's emotions. The average man or woman will resent any attempt to joke with them in public. Let me give you a concrete example of the wrong kind of curiosity advertising. A number of years ago when I was working for a grocery I conceived or borrowed an idea on curiosity advertising. I placed a lot of empty sugar barrels around town. The top of each barrel was covered with screen wire and a sign was tacked on the side of the barrel advising the public that the barrel contained live snakes. Upon looking in the barrel they found another sign stating that pure sugar could be had at Blank's grocery. Now you can imagine how embarrassed one felt after looking into the barrel to turn and find a group of bystanders laughing at him. There was only one thing that idea lacked to make it a success, and that was real live snakes. Had the snakes been in the barrel the onlooker would have been repaid for his efforts and would have also noted that pure sugar could be had at Blank's grocery.

Make Show Cards "Silent Salesmen"

Remember that your show cards are a medium of expression so don't leave them to the artistic conception of a sign painter. Don't make your show cards resemble a puzzle. Cards of this kind were all right in the days when we built our houses with a

FIELD ELECTRICAL
MAKE A VISIT TO THE ELECTRICAL HOME
TODAY & SEE OUR DISPLAY of ELECTRICAL APPLIANCES
AT 2827 ARROWHEAD AVE.

Display used to announce the local electric home exhibit. The home and exhibit details were to correct proportion and were a faithful reproduction of the actual exhibit.

scroll saw, but in this age most of us are too busy to work puzzles. The show cards should be legible and not too large. Remember that you are selling merchandise, not cardboard. Your cards should tell the public of the strong selling features of the merchandise and should induce the passer-by to buy now. When you write your show cards remember that you are talking directly to your customers, so conduct yourself accordingly. Avoid offensive persistence and solicit their patronage as courteously as if they were in your store. A show card that tells the people what they want to know without asking questions serves its purpose admirably. Emphasize the usefulness and quality of the merchandise with your show cards. Stock cards are not practical. It is always best to prepare your cards especially for the display in which they are to be used.

If the average dealer found one of his employees misrepresenting the firm he would discharge him immediately. But he will carelessly allow his show windows to misrepresent the firm. Put up a good front and then live up to it.

The Electrical Dealer's Opportunity in Radio

By A. S. Lindstrom

Radio Sales Engineer, San Francisco, Calif.

THE merchandising of radio, not only of completed sets but of parts and accessories, appears after several years of floundering to be developing into certain recognized channels. Strange as it may seem to the uninitiated the sale of completed sets is gravitating strongly in the direction of the large retail music houses, department stores and exclusive radio stores. These retail agencies do not center their efforts on parts and equipment, but leave this branch of the radio business scattered between the recognized radio dealers and the retail stores that are putting in stocks of sets, parts and accessories.

From the very inception of radio these merchandising practices have presented a most interesting spectacle. When radio was first developed into a business of considerable proportions about five years ago, the retail business was centered almost wholly in electrical stores. Since that time there has grown up a distinct class of radio dealers, some of whom have installed expensive and elaborate show rooms and undertaken the retailing of radio sets and equipment from a thoroughly practical point of view. Recently the department stores have installed complete radio departments and are now handling a considerable volume of radio business.

Radio has appealed to the imagination of the larger music houses and many of these music concerns now carry complete and extensive radio stocks in conjunction with those of pianos, phonographs and other musical instruments. As the public has been for so many years educated to go to the music houses for its musical supplies, it seems but natural that these stores should occupy a very important place in the merchandising of radio. These music houses, however, are centralizing their sales efforts upon complete sets and do not, to any great extent, handle parts.

A high class radio set, capable of producing volume, clear reproduction and satisfactory distance, means an expenditure of from $100 to $400, depending upon the type of receiving set, and particularly upon the class of cabinet container. Hardwood cabinet containers, with the entire set self-enclosed, have within the last two years become exceedingly popular. The amount of money involved in the purchase of such a receiving set seems to require an arrangement by which payment can be made in monthly installments. The music stores, department stores and exclusive radio dealers have perfected plans whereby radio sets are sold upon the installment plan. As department stores and music dealers have been educated for years to selling upon the installment basis and have the machinery and equipment for conducting it upon this basis, they are naturally and logically developing their sales to large proportions.

Successful selling of complete receiving sets involves in nine cases out of ten, the installation of the antenna, lead-in wires, and other necessary mechanical installation. A considerable proportion of the buyers of complete sets would rather purchase a set completely installed than to endeavor to make the installation themselves. This situation requires that houses selling complete sets provide experienced men to make these installations. Very frequently the failure of a set to operate satisfactorily is traced entirely to the inexperience and lack of knowledge of the operator. This requires instruction which frequently is considered as a part of the service rendered to the purchaser of a receiving set.

There seems no doubt that radio sets will be sold largely through the channels enumerated above. The radio "fans," however, prefer to buy their parts and build their own sets. Most radio dealers carry large stocks of parts. The electrical dealer, too, has found that a radio department carrying modern parts and equipment is a profitable branch of his business.

The Field for the Electrical Dealer

It would appear, from a review of the radio merchandising situation, that there is a vast field in parts and equipment for the recognized electrical dealer. The criticism, if we would call it such, which seems to be directed toward the merchandising policies of the electrical dealer, is that in the display and handling of radio parts and equipment he does not always give this branch of his business the same detailed and careful attention that he gives to his electrical supply department. Radio in its very nature, dealing as it does primarily with high class entertainment, should in the sales program be associated with this idea.

There is no doubt that many electrical dealers have made an outstanding success with their radio departments. Radio parts and equipment naturally fit in with the sale of electrical supplies. That radio parts and equipment may be developed into a very important and essential part of the total volume of sales of any electrical dealer is evident to anyone who has made a study of the situation.

The installation and successful conduct of a radio department requires that the dealer carry in stock only the highest quality parts and sets, and that he be or employ for this branch of the business an experienced man who knows radio and who possesses a natural selling ability.

Government Ownership

By Hon. Herbert Hoover*
Secretary of Commerce

SENATOR La FOLLETTE'S party proposes government ownership and operation of railway and other public utilities. The Senator emphasizes this: "I am for government ownership of railroads and every other public utility—every one." This means all railways, power, light, telephone and telegraph companies. The Republican party stands for private ownership, with the prevention of abuse through government regulation of service and rates or profits. Between them we must choose. Either we are to remain on the road of individual initiative, enterprise and opportunity, regulated by law, on which American institutions have so far progressed, or we are to turn down the road which leads through nationalization of utilities to the ultimate absorption into government of all industry and labor. What the Senator proposes is far more than a transitory experiment of government in business; it is a change in our social, economic, and political principles that will react to revolutionize our government itself.

HERBERT HOOVER
says, "Either we are to remain on the road of individual initiative, enterprise and opportunity, regulated by law, . . . or we are to turn down the road which leads through nationalization of utilities to the ultimate absorption into government of all industry and labor."

In its immediate form this is a proposition that the government should buy and run the railways, electrical and other utilities, valued by official commissions at about forty billions of dollars, with two million seven hundred thousand employees, requiring two billions annually for bond interest, with an operating budget of ten billions per annum. To keep pace with natural growth these concerns must spend two billions of new capital yearly for extensions. This is a financial transaction and a venture into business of a magnitude never before undertaken by any man or by any government, democratic or otherwise—except in Russia. Surely before we embark on such a voyage we should look into the possibility of profit, examine the chart of the place we are going, and consider the capacity of our vessel to carry the cargo.

It is for the American people to decide. If they are to decide rightly they should have the reasons set before them in terms of sober economic and social thought, not in vituperation and appeals to hate. I accredit the sincerity of the advocates of these propositions, and I believe they have the manhood to credit ours. There is but one consideration—public interest. If I believed for one moment that this adventure would reduce rates, that it would produce better service, that it would decrease taxes, that it would benefit the employees, that it would maintain discovery, initiative, and advance in the development of these services, that it would not wreck our democracy, that it would strengthen the foundations of social and spiritual progress in America, or even that it would do a few of these things, I would unhesitatingly accept this proposal, stupendous as it is.

But I do not believe it. I am convinced not only from the experience of our own country, but from the attempts made abroad, that government operation is a step backward in every one of these propositions. It is the negation of progress. America has found the true road of advancement in these enterprises through sustained initiative and equality of opportunity to our people with public control to prevent abuse. Our salvation consists in following this line with increasing intelligent devotion.

Much of the present agitation is based upon conditions, not as they are today but as they were a generation ago. There were then great abuses that called for a remedy. The Republican policy of public regulation and the historic moral upheaval to which Theodore Roosevelt contributed more than any one man cured the worst of these evils and created the machinery of government to meet the rest. Theodore Roosevelt was the enemy of government ownership and the advocate of public regulation.

There is scarcely a single utility today that is not under public control through some governmental commission, local or national. These commissions today fix the rates, the issues of stock, the time tables, the car service, the profits. Our great national water powers are reserved to the government

*Excerpts from a radio address delivered from Washington, D.C., Sept. 29, and broadcast over nationally interconnected stations.

through fifty-year leases, under public control. And our commissions are not alone preventing abuse; they are maintaining initiative, enterprise, and progress in our railway and other utilities, as witness their enormous growth and constantly improving efficiency and service.

Regulation has, through stabilizing rates, reduced the cost of capital by increasing the security for the savings of our people. From this security and within our generation there has come a new tide, and that is toward popular ownership as distinguished from government ownership. These enterprises are no longer owned or controlled by a few. One of our great service corporations has nearly 400,000 stockholders, another over 200,000. The power companies have over 700,000, their bonds are directly and indirectly, through our mutual insurance companies and savings banks, in the hands of literally tens of millions of owners. A silent revolution is transferring ownership to the public. Moreover, the new generation of administrators of these enterprises has firmly grasped its responsibility to the public. Indeed there are deep and promising currents originating in our economic life driving toward a mutualization of public and private interest, employer and employee interest with promise of a new period in industrial development. There has been a genuine growth of business conscience and service, and this growth is far more precious than any amount of legislation.

And from it all we have by and large evolved the best actual service to the people from utilities that there is in the world. It may not be perfect, but no one who has tried a European government railway or a telephone needs conviction of our superior service. Moreover, there is a diffusion of service and use among our people double and treble the proportions to the population of any other country. A larger proportion of our homes have electric lamps, a larger proportion have telephones. Many of our people travel by rail and they travel more miles. We ship more goods per person, and our workmen have more power at their elbow than any other workmen in the world. The wages in our utilities give the highest standards of living and comfort on the earth. If our utilities were dominated by the malignity that some contend, these things would never have come about.

Effect Upon Our Democracy

Neither our national nor our state governments are planned or equipped for the task of government operation of utilities. Nobody ever tried it on our stupendous scale of a continent, but there are governments which, in their smaller scope, do operate in some fashion some of their utilities. Since it is always in worse fashion than ours, their example is no temptation to imitation, but it does illustrate that some governments, on some scale, in some fashion, can operate some of them. But none of them have ever attempted to operate all the utilities, nor does any one of them possess 15 per cent of our railway mileage, or 6 per cent of our power, or 15 per cent of our telephones, and so on.

The very first and fundamental difficulty that our form of government presents is the relation of the states to the federal government. For in our plan we conceive that liberty requires a great measure of decentralization in authority. If these public utilities are to be operated by the federal government we at once deprive the states of their measure of authority and control over railway, power, light, and communication companies—we make the service in these states dependent upon the will of Washington, thousands of miles away. It is an impossible conception that we give the states the power to regulate the business of the federal government as they now regulate these services. Or are we going to divide the railways and power and communications into 48 systems, each ending at the boundary of its own state? Whichever we do will crack the timbers of our government.

If we pile these forty billions of business and two million seven hundred thousand employees upon the government, one of two things happens. Either the 530 members of Congress or the hundreds of members of state legislatures become their real boards of directors, or, as it has been claimed, these great businesses could be placed in the hands of nonpartisan commissions or government corporations, somehow free from politics and the dead hand of bureaucracy. Neither alternative will work. If we were to set up such agencies, so free from restraint of the Congress and legislatures as to accomplish these objects, we would have created gigantic despotisms controlling the well-being of our whole people — and incidentally, controlling the very election of our officials. As a matter of fact, we can do nothing of this kind if we are to maintain a democracy. We can not have a democracy and deprive our elected representatives of their control of government investment, their power to fix salaries and wages, their independence in the investigation of the conduct of public officials. The reservation of any or all of these powers renders any kind of a commission subservient to the members of legislative bodies, no matter what the theory is. When they are subservient to elected officials, politics will be their daily need. Above all, the members of our legislative bodies represent districts, states, parties, and groups of opinion. Each member is expected by his constituents to look out for their local or group interests first. They have to be elected upon the results they obtain. Partisanship, "log-rolling," and politics would be the inseparable accompaniments of administration. No great business can be efficiently administered by such a board or such a basis of choice. We shall convert business into politics, and surrender efficiency for spoils. If we distributed railway extensions as we distribute public buildings; if we located electric power plants as we locate reclamation projects; if we divided up public industries generally as we share river and harbor improvements and army and navy stations—then as surely as night follows the day facilities will be wastefully provided for those districts or groups which are politically strong, and they will not be adequately provided for the districts or groups that are politically weak.

Higher Rates to the Public

Unless the federal or local governments can give the public lower rates, there is no use undertaking the gamble.

If the government is to reduce rates it must do so either by the saving of private profits or by reducing operating expenses or lumping them on the taxpayer. During the past four years the railways have on an average earned less than 4 per cent on the Interstate Commerce Commission valuation. Even if this value were reduced by 25 per cent, they would have earned only 5 per cent. Our electrical utilities are regulated at earnings between 6 and 8 per cent upon their invested capital. The government could not borrow the huge sums necessary at less than 5 per cent.

In a sale to the government the constitutional requirements would for various legal reasons, probably result in a much larger sum than the forty billion dollars of present valuations by commissions and others.

Moreover, the wasteful distribution of the hundred and fifty millions of capital invested annually in the Post Office, Reclamation Service, Shipping Board, rivers and harbors and roads, would not be a patch on the waste in appropriations when our legislative bodies get a chance to handle two billions per annum of new capital outlay. For all these reasons I am convinced that interest charges alone to the government would be larger than the present utility profits, and no economy lies there.

Nor can the government operate as economically as private enterprise. If we take over nearly three million new employees into public service we must put them under an air-tight civil service, to be hired by a separate commission and promoted by seniority and at once we have created a bureaucracy. Otherwise, we would have nearly three million jobs to be given out and a political debauchery unparalleled in all history.

Increased Taxes

Another question worth examining is the direct and indirect tax burdens which will be imposed upon the public, assuming always that rates pay operating expenses and interest. The addition of forty billion dollars to the national debt differs much from the debts of many thousands of private enterprises now comprised in these public utilities. The failure of a single private enterprise is a loss to its owners only, but with this entire investment transferred to the government every citizen would pay every loss of capital, directly or indirectly from taxes or rates, whether he liked it or not. When individuals enter upon a foolish project they pay for it, but if the government does the same thing the foolish and the wise must pay for it.

Today the combined utilities contribute about six hundred million dollars in taxes to the federal and local governments. It is unlikely that in government operation our federal government will pay taxes to the states or the states to counties out of utility rates. Thus the local governments would need to find other sources of revenue. If the customers of these utilities and the taxpayers were identical in their participation it would not matter, but it happens that utilities have a larger ratio of investment and taxes in the farming districts than they have in the big cities. It would damage the farmer of Massachusetts but 3 or 4 per cent to denude the state of utility taxes, but it would increase taxes 40 per cent in many agricultural counties in other states.

And above all, if the history of other governments operating utilities counts, the inefficiency in government would not be taken up in rate increases, by which the actual user pays, but by lumping it onto the taxpayer.

Employees Worse Off

The next question to examine is whether the employees would benefit by being incorporated into the government service. The first and foremost result of such an operation would be a dispute over the right to strike. It is by no means certain that a government can continue as a government and admit the right of government employees in vital services to strike against it. Nor can legislative bodies delegate the right to settle wages and salaries to any commission or they will have delegated their control over expenditures, which is one basis of democracy. In any event, under government ownership employees must in final analysis bargain with legislative bodies, and bargaining will rest not upon economic need or economic strength, but on political potence. The present federal employees, denying themselves the right to strike, have just now, after eight years, succeeded in getting some of their deserved increases in pay. The public utility employees have had them already for years. Their wages are today the highest real wage in the world. Some have assumed that the political strength of this great mass of employees will enable them to dictate the election of legislative members and thus secure their desires. This means the creation of another bloc, the arraying of class against class, perhaps the most dangerous tendency in our politics today.

It substitutes internal pull and external politics for individual endeavor. It puts a damper on achievement, a premium upon wire-pulling. It penalizes whole-hearted devotion to work.

But there lies even a broader issue of the ultimate results to the freedom of labor. Upon it I can do no better than to quote from Mr. Gompers in a speech at Montreal in June, 1920:

"I believe there is no man to whom I would take second position in my loyalty to the Republic of the United States, and yet I would not give it more power over the individual citizenship of our country. . . .

"It is a question of whether it shall be government ownership or private ownership under control. If I were in the minority of one in this convention, I would want to cast my vote so that the men of labor shall not willingly enslave themselves to government authority in their industrial effort for freedom. . . . Let the future tell the story who is right or who is wrong, who has stood for freedom and who has been willing to submit their fate industrially to the government."

WASHING MACHINE DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1924

A list of washing machine manufacturers giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of our knowledge it is correct at date of publication. When referring to this list in any way, mention the **Journal of Electricity.**

Key to Abbreviations

O—oscillating type
VC—vacuum cup type
Cl—cylinder type
D—dolly type
Im—impeller type
DFM—Dayton Fan & Motor Co.
Wx—Westinghouse
GE—General Electric
RM—Robbins & Myers
Em—Emerson
Dom—Domestic
Cen—Century
W—wood
M—metal
Sw—swinging
St—stationary
An—Anchor
Am—American
C—copper
TC—tinned copper
Cz—copper, zinc lined
GI—galvanized iron
Z—zinc
VM—various models

Manufacturer	Trade Name	Operation	Motor: Horse Power	Motor: Maker	Wringer: Type	Wringer: Length in Inches	Tub: Dimensions	Tub: Capacity (Sheets)	Tub: Material	Retail Price: Eastern	Retail Price: West of Rockies	Western Sales Representative	Western Distributor	Nearest Point At Which Repair Parts May Be Obtained.
Almetal Mfg. Co., St. Louis, Mo.	"Almetal" "Pollyanna"	VC O	1/4 1/4	GE GE	W W	11 11	19x18 26x17	6 7	C C	$135 $120	$150 $135	.....	.....	Distributor.
Altorfer Bros. Co., Peoria, Ill.	"A. B. C."	Cl O D VC	1/4 1/6 1/4 1/4	Wx Wx Wx Wx	M M & W M	12 12 11 12	22x24	6 6 6 8	W or Z	$145 99 95 150	.....	**R. M. Allyn,** **Richter Sales Co.,** 310 Stewart St., Seattle	**A. A. Wilson,** Los Angeles **E. W. Murray Ltg. Co.,** Spokane **Richter Sales Co.,** Seattle **Electric Service Co.,** Portland **Maxwell Howe Co.,** Oakland	Distributors.
Apex Appliance Co., 3223 W. 30th St., Chicago, Ill.	"Apex"	O O	1/6 1/4	GE RM Wx	M M	11 12	....	6–9 16	TC TC	....	....	**A. M. Smith Co.,** Los Angeles	Dealers	Dealers
Apex Elec. Mfg. Co., The 1067 E. 152nd St., Cleveland, Ohio	"Rotarex"	Cl	1/4	Own	M	12	17x18	8	G C	$152.50 $167.50	$157.50 $172.50	**G. A. Buckley,** 1405 Walnut St., Kansas City, Mo.	**The Apex Elecl. Distrib. Co.,** San Francisco, Denver, Fresno **North Coast Electric Co.,** Portland, Seattle, Tacoma, Spokane **Electrical Equipt. Co.,** Butte **Illinois Elec. Co,** Los Angeles **Inter-Mountain Elec. Co.,** Salt Lake City	Distributors
Automatic Elec. Washer Co., Newton, Iowa	"Automatic"	D O	1/4	Wx GE	W or M	12	.....	6 and 12	C or W	$110	$120	**L. A. Francis,** 5208 Manila Ave., Oakland **C. J. Reid,** 8 Front St., Portland	**Domestic Elec. Appl. Co.,** Seattle **Inter Mountain Elec. Co.,** Salt Lake City	Oakland Los Angeles Portland
Barlow & Seelig Mfg. Co., Ripon, Wis.	"Big 3"	VC	1/4	Em	W	11 and 12	.....	6 to 8	C	VM $100 to $150	VM $110 to $165	**Dohrman Commercial Co.,** San Francisco	**Dohrman Commercial Co.,** San Francisco	Distributor
Buckeye Prima Co., The Sidney, Ohio	"Prima"	O	1/4	GE	M	12	.....	8	W	$160	.....	**H. R. Christy,** 322 Leary Bldg., Seattle	**H. R. Christy,** 322 Leary Bldg., Seattle	Distributor
Chicago Dryer Co., 2210-20 N. Crawford Ave., Chicago, Ill.	"Chicago"	O	1/4	Em	M	12 and 14	26x18 26x21 26x24	9 12 15	Cz	$200 to $375 VM	.....	.....	**M. E. Hammond,** Pacific Bldg., San Francisco **S. W. R. Daily,** Seattle **Maritzen-Kuns Co.,** Los Angeles	Distributors
Clarinda Mfg. Co., Clarinda, Iowa	"New Clarinda"	D Cl	1/6 1/4	GE GE	M M	10 12	22x22 25x25	6 6	W C	$80 $130	$90 $140	**Thos. T. Hoffmire,** 178 W. 41st Place, Los Angeles		
Clark Cadle Harmon Corp., Rochester, N. Y.	"Harmony"	Cl	1/4	Wx	L	12	18½x19	8	W	$150 to $170	.....	**Bert D. Keller,** 821 Market St.	**Dunham, Carrigan & Hayden Co.,** San Francisco	San Francisco
Coffield Washer Co., The Dayton, Ohio	"Coffield" A "Coffield" D	O O	1/4 1/4	Sp Sp	Sw Sw	14 12	22x22 22x17½	10 8	TC TC	$160 $150	$165 $155	**"Washer" Wilson,** 819 So. Hill St., Los Angeles	**"Washer" Wilson,** Los Angeles **Honeyman Hardware,** Portland **Northwest Washer Co.,** Seattle	Distributors
Conlon Corporation, 52nd Ave. and 19th St., Chicago, Ill.	"Incomparable Conlon"	Cl	1/4	GE	M	12	23x22	6	C GI	$180 $170	.....	**Woodill-Hulse Elec. Co.,** Los Angeles	Same **Welsbach Company,** 863 Mission St., San Francisco	Distributor
Davis Sewing Mch. Co., The Dayton, Ohio	"Blue Bird"	O	1/6	GE Wx	Sw	11	16¾x27	8	C	$160	$160	**C. A. Eastman,** 213 Corbett Bldg., Portland	**Blue Bird Appliance Co.,** Seattle **Alexander & Lavenson,** San Francisco **K. P. Loop,** McMinnville, Ore.	San Francisco
Eden Washer Corp., 80 Maiden Lane, New York	"The Eden"	Cl	1/4 1/6	RM	Sw	12	24½x22	8 12	GI TC	.....	$160 $175 $185 $200	**L. M. Mintzer,** 200 Davis St., San Francisco	**L. M. Mintzer,** 200 Davis St., San Francisco **Woodill & Hulse Elec. Co.,** Los Angeles **Eden Serv. Sta.,** Portland	Distributors
Dawn Mfg. Co., The Bridgeport, Conn.	"Dawn"	VC	1/6	GE	Am	12	.....	6	....	$85	$85	**Frederic A. Clarke** 351 Oak St., Glendale, Cal.		336 S. Broadway, Los Angeles
Delco-Light Company, Dayton, Ohio	"Delco-Light"	O	1/6	DL	M	11	22x22	8	C	.....	$160	.....	**W. L. Cochran, Inc.,** San Francisco **Ivan L. de Jongh,** Los Angeles **Modern Appliance Co.,** Seattle	Distributors
Federal Electric Co., 8700 S. State St., Chicago, Ill.	"Federal"	O	1/4	Wx	L	....	22x27	8	C GI	$175	$175	**Federal Electric Co.,** Landregan & Powell Sts., Oakland	**Lushington Elec. Co.,** Seattle, Wash. **Cook Bros.,** Los Angeles	Distributors
Foote-Burt Co., The Cleveland, Ohio	"Aerobell"	VC	1/4	GE	M	....	18½x24	8	C	$165	$175	.....	**Barker Bros.,** Los Angeles	Los Angeles
Fosston Mfg. Co., St. Paul, Minn.	"Pal-O-Mine" "New Liberty"	O Cl	1/6 1/4	Wx Wx	St Sw	....	....	6 8	C W	$125 $145	....	**Pryser & Herman,** 815 Union League Bldg., Los Angeles	**Western Agencies, Inc.,** San Francisco	San Francisco
G. R. S. Products, Inc., Albany, N. Y.	"G-R-S"	Cl	1/4	Own	Sw	12	.....	8 to 18	C GI	$140 to $220	.....	**A. C. Holden,** 1964 Eldorado Ave., Berkeley	Dealers	Factory
Getz Power Washer Co., Morton, Ill.	"American Beauty"	O O	1/4 1/4 1/6	Wx GE Wx GE	M M W	12 12 11	24x26 26x28 24x26	6 8 6	C C C	$135 $155 $99	$145 $165 $109	**Getz Washer Sales Co.,** 910 S. Grand Ave., Los Angeles	Same	Los Angeles
Geyser Electric Co., 5008 Bloomingdale Ave., Chicago, Ill.	"Geyser"	Cl	1/4	Em Dom	L	11	.....	3 to 9	C GI	$75 to $175	$85 to $185	**Ion Arnold,** Westminster Hotel, Los Angeles	.....	Chicago, Ill.

WASHING MACHINE DIRECTORY
(CONTINUED)

Key to Abbreviations
O—oscillating type
VC—vacuum cup type
Cl—cylinder type
R—Rotary
D—dolly type
Im—impeller type
DFM—Dayton Fan & Motor Co.
Wx—Westinghouse
GE—General Electric
RM—Robbins & Myers
Em—Emerson
Dom—Domestic
Wg—Wagner
Cen—Century
L—Lovell
W—wood
M—metal
Sw—swinging
St—stationary
An—Anchor
Am—American
C—copper
TC—tinned copper
Ca—copper, zinc lined
GI—galvanized iron
Z—zinc
NP—Nickel Plated
VM—various models

Manufacturer	Trade Name	Operation	Motor		Wringer		Tub			Retail Price		Western Sales Representative	Western Distributor	Nearest Point At Which Repair Parts May Be Obtained.
			Horse Power	Maker	Type	Length in Inches	Dimensions	Capacity (Sheets)	Material	Eastern	West of Rockies			
Haag Bros. Co., Peoria, Ill.	"Haag"	D Cl O	1/4	GE RM Em	W M M	12	.....	6 6 7	W TC TC	$88 to $145	.....	**H. C. Hopkins,** 323 Phelan Bldg., San Francisco	**Elec. Washer Co.,** **W. E. Peters,** Seattle, Wash. **Cook Bros.,** 653 So. Figueroa St., L. A.	
Horton Mfg. Co., Fort Wayne, Ind.	"Horton"	VC D VC	1/4 1/6 1/4	GE GE GE	M M M	12 10 12	18x25 18x25	8 6 8	C W VE	$160 $80 $165	.....		**Baker Hamilton & Pacific Co.,** S. F. **A. A. Wilson,** Los Angeles Hardware Jobbers	Distributors
Hurley Machine Co., 22nd St. & 54th Ave., Chicago, Ill.	"Hurley Thor"	CL	1/6 1/6 1/4 1/4	GE Wx GE Wx	M W W	11 12 14	.....	6 to 12	C or GI or W	$125 to $275	$135 to $280	**Hurley Machine Co.** **J. W. Ferry,** 425 Rialto Bldg., San Francisco	**Pacific States Electric Co.,** San Francisco, Los Angeles, Oakland, Portland and Seattle	All branches of distributor
	"Hurley Superior"	O VC	1/6 1/6	GE Wx	M M	11 11	.....	5 to 8	C	$95 to $140	$99 to $150			
Johnson Elec. Washer Co., 40th & Adeline Sts., Oakland, Cal.	"Johnson Impeller" "Johnson" "Johnson"	Im Im D	1/4 1/6 1/6	Wag Wx Wx	Sw St St	11 11 11	14x22 14x22 14x22	6 6 6	C C C	$100 to $175	$100 to $175	**Johnson Elec. Washer Co.,** 40th & Adeline Sts., Oakland, Cal.	Factory, Oakland **Geo. W. Rethschult,** 316 Commercial St., Los Angeles **L. Brandenburger,** Salt Lake City	Oakland Los Angeles Salt Lake City
Landers Frary & Clark, New Britain, Conn.	"Universal" "Whirlwave"	Cl O	1/4 1/4	RM Wx Wx	W M M	12 12 12	18x21 18x26	6 8	GI C C	$150 $162 $150	$150 $162 $150	**Landers, Frary & Clark,** Call Bldg., San Francisco	**Electric Appliance Co.,** San Francisco **Baker Hamilton & Pacific Co.,** S. F. **Seattle Hdwe Co.,** Seattle **Electric Corporation,** Los Angeles **Marshall-Wells Co.,** Portland	San Francisco and Los Angeles
Laundryette Mfg. Co., 119 E. 152nd St., Cleveland, Ohio	Laundryette	.....	VC	Dom Ohio	.....	.....	17½x26½	6	.....	.....	.....	.....	**W. S. Cochran,** San Francisco **I. L. De Jongh,** Los Angeles **Modern Appl. Co.,** Seattle	
Maytag Co., The Newton, Iowa	"Maytag Gyrafoam"	Cl	1/4	GE	Sw	12	22x22	6	A	$155	$165	**Chas. H. Long,** 315 Belmont, Portland	**Schlueter's,** Los Angeles, San Francisco **Holly-Mason Hdwe Co.,** Spokane **The Salt Lake Hdwe Co.,** S. L. C. **Sloat Wholesale Co.,** Portland **Southern Electrical Co.,** San Diego **Stewart Wholesale Co.,** Boise, Idaho **West Coast Sales Co.,** Oakland	Representative or Distributors
Meadows M'f'g. Co., Bloomington, Ill.	"Meadow Lark" "Greyhound" Master No. 2 Laundrola	Cl O Cl ..... O	1/4 1/4 1/4	RM and GE	M M M	11 11 11	18x20 18x28 18x20 18x30 18x22	6 8 6 12 6	GI C GI C C	$135 $155 $130	$150 $165 $165 $125 $226 $130	**L. A. Robinson,** 616 W. 9th St. Los Angeles	**Manufacturers Rep. Co.,** San Francisco **Fobes Supply Co.,** Portland, Seattle **Capital Elec. Co.,** Salt Lake City **Mine & Smelter Supply Co.,** Denver **Butte Elec. Supply Co.** Butte **So. Cal. Appl. Co.,** Los Angeles	All Jobber Representatives
Modern Laundry Mch. Co., Kansas City, Mo.	"Mola"	Cl	1/4	.....	W	12	.....	.....	.....	$130	$135	**Geo. E. Prine,** care of A. A. Wilson, 606 S. Spring St., Los Angeles	**A. A. Wilson,** 606 S. Spring St., Los Angeles	Los Angeles
One Minute Mfg. Co., Newton, Iowa	"One Minute"	Cl D	1/3 1/4	Dom Dom	Sw Sw	12 12	.....	6 6	C W	$145 $99	$152 $106.50	**A. J. Ratelle,** 619 Pine St., Seattle	**Dohrman Commercial Co.,** **Parmelee-Dohrman Co.,** Los Angeles	San Francisco
Puffer-Hubbard Mfg. Co., 2601-32nd Ave., S., Minneapolis, Minn.	"Daylight"	VC	....	Em	W M	12 12	.....	....	C W	$155	$165	**Puffer-Hubbard Mfg. Co.,** 207 Railway Exchange, Portland	.....	.....
Savage Arms Corp., Utica, New York	Savage Washer and Dryer	R	1/4 1	Wx Wag	No	ne	26½x26	7	GI C	.....	.....	**C. W. Adams,** Rialto Bldg., San Francisco	**L. C. Warner Co.,** San Francisco, Seattle **Hausen Furn & Music C.,** Brigham, Utah	Distributors
Sunbeam Elec. Mfg. Co., Evansville, Ind.	"Sunbeam"	O	1/6	Wx	M	12	19x23	8 6 18	C	$155	$165 $135 $235	**F. M. Hills,** 516 Bancroft Blvd., San Diego	.....	San Francisco
Sunny Line Appliances, Inc., 4058 Beaufait Ave., Detroit, Mich.	"Sunnysuds"	O	1/4	Dom	M	12	.....	...	C	$125	$135	.....	**Woodhill-Hulse Elec. Co.,** L. A. **Poole Elec. Co.,** 1206-4th Ave., Seattle	
Syracuse Washing Mch. Corp., Syracuse, N. Y.	"Easy Vacuum Elec. Washer"	VC	1/6	GE RM	M	12	.....	8	C GI NP	$155 $125 $139	$165 $135 $149	**J. Lee Richards,** San Francisco **Syracuse Washing Mch. Sales C.,** 1109 Market St.	.....	San Francisco
The "1900" Washer Co., Binghamton, N. Y.	"Cataraction"	O	1/4	RM	Sw	....	.....	8	....	$155	$165	.....	.....	.....
Western Electric Co., New York City	"Western Electric"	Cl	1/6	Own	Sw	11¾	22x23	6	GI TC	$137.50 $150.00	$147.50 $160.00	**Western Electric Co.,** San Francisco, Los Angeles, Oakland, Seattle, Tacoma, Portland, Spokane, Denver, Salt Lake City	**Western Electric Co.,** San Francisco, Los Angeles, Oakland, Seattle, Tacoma, Portland, Spokane, Denver, Salt Lake City	All Branch Offices
White Lily Mfg. Co., Davenport, Iowa	"White Lily DeLuxe" "White Lily" Thrift"	Cl C	1/4 1/4	A&B A&B	Sw Sw	12 12	26x30 26x36	6 6	GI C GI C	$150 $132.50	$165 $147.50	**H. J. Valentine,** 488 N. Cypress, Burbank, Cal. Same	.....	Los Angeles
H. E. Williamson Co., 22 Grace St., San Francisco	"California Maid"	Cl	1/6	Cen	Sw	11	18x26	8	GI	.....	$125	**H. E. Williamson Co.,** San Francisco	.....	San Francisco
Woodrow Mfg. Co., Newton, Iowa	"Woodrow"	Im	1/4	Em	Sw	12	.....	6	W C	$102	$107	.....	**W. E. Dooley & Co.,** Seattle **Calif. Woodrow Wash. Mach. Co.,** Long Beach	Distributors

ELECTRIC IRONER DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1924

A list of Electric Ironer Manufacturers giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way, mention the **Journal of Electricity.**

Key to Abbreviations

E—electric heat
G—gas heat
Gn—gasoline heat
Wx—Westinghouse
GE—General Electric
R&M—Robbins & Myers
Dom—Domestic
WE—Western Electric
B—belt drive
G—gear drive
FC—foot control
HC—hand control
A—automatic
VM—various models

Manufacturer	Trade Name	Shipping Weight (lbs.)	Dimensions (floor space)	Length of Rolls (in.)	Heat for Rolls	Wattage for Rolls	Motor: Make	Motor: H.P.	Drive	Control	Speeds	Price: East	Price: West of Rockies	Western Sales Representative	Western Distributors	Nearest Point At Which Repair Parts May Be Obtained.
Altorfer Bros. Co. Peoria, Illinois	"A. B. C."	291 355	33x25	26 44	E G E G	1350 2700	Wx Wx	1/6 1/6	B B	FC FC	....	$145 $125 $200 $165	$155 $135 $210 $175	**W. E. Peters** 89 E. 12th St., Portland	**A. A. Wilson** 612 S. Spring St., Los Angeles **E. W. Murray Lighting Co.** 313 Riverside Ave., Spokane **Richter Sales Co.** 310 Stewart St., Seattle **The Electric Service Co.** 175 Park St., Portland	Western Distributors
American Ironing Machine Co. 844 W. Adams St., Chicago, Ill.	"Simplex"	VM	VM	26 to 56	E G Gn	VM	.....	....	B	HC	1 and 2	VM	VM	**H. R. Basford Co.** 180 New Montgomery St., San Francisco	**H. R. Basford Co.** San Francisco **Fobes Supply Co.** Portland, Seattle **Woodill-Hulse Elec. Co.** 111 E. 3rd St., Los Angeles	San Francisco
Apex Appliance Co. 3223 W. 30th St., Chicago, Ill.	"Apex"	511 526	26x54	44 48	E G Gn	3200	GE R&M Wx	1/6	G	FC	....	$160	$170	**A. M. Smith Co.,** 219 W. 3rd St., Los Angeles	**A. M. Smith Co.,** 219 W. 3rd St., Los Angeles	Los Angeles
Apex Elecl. Distribg. Co. 1067 E. 152nd St., Cleveland, Ohio	"Rotarex"	325	22x60	46	E G	3000	Own	1/6	B	FC	1		$152.50 (Cash) $167.50 (Time)	**G. A. Buckley** 1405 Walnut St., Kansas City, Mo.	**Apex Elecl. Distrib. Co.** 681 Market St., San Francisco 1437 Welton St., Denver 2011 Broadway, Oakland 1024-11th St., Sacramento 2117 Inyo St., Fresno **Illinois Elec. Co.** Los Angeles **North Coast Elec. Co.** Portland and Seattle **Electrical Equip. Co.** Butte, Montana **Intermountain Elec. Co.** Salt Lake City	Western Distributors
Barnett Foundry & Machine Co. Irvington, N. J.	"Capitol"	470	60x24	46	E G Gn	2700	.....	1/6	B	FC	....	$155	$170	.....	.....	Factory
Deming Mfg. Co. 5103 Lakeside Ave. Cleveland, Ohio	"Deming"	420	63x33	46	E G	3000	Ohio	1/4	G	FC	....	$185 $165	.....	.....	.....	.....
Holland Maid Co. Holland, Mich.	"Holland Maid"	280	57x24	48	E G	....	GE	1/6	G	FC HC	....	$185	$185	.....	.....	Factory
Horton Mfg. Co. Fort Wayne, Ind.	"Horton"	320	22x42	30	E G	2000	GE	1/6	B	FC	....	$140	.....	.....	**A. A. Wilson** Los Angeles **Salt Lake Hdwe Co.** Salt Lake City **Hexter & Co.** Portland **Schwabacher Hdwe Co.** Seattle **Holley-Mason Hdwe Co.** Spokane	Factory
Hurley Machine Co. Chicago, Ill.	"Thor Automatic"	565	54x25	44 or 50	E G Gn	1500	GE or Wx	1/6	G	A	2	$165	$180	**Hurley Machine Co.,** 425 Rialto Bldg., San Francisco	**Pacific States Elec. Co.** SanFrancisco, Oakland, Seattle, Portland and Los Angeles	Western Distributors
The "1900" Washer Co. Binghamton, N. Y.	"1900"	450	27x53	44	G E Gn	2500	R&M	1/10	G	FC	....	$160	$175	**W. Lee Holmes** 71 New Montgomery St., San Francisco	**W. Lee Holmes** 71 New Montgomery St., San Francisco	San Francisco
Sperlich & Uhlig Co. Detroit, Mich.	"Ironrite"	410	26x63	46	E G	3500	Dom	1/4	G	FC	....	.....	.....	**J. D. Paladeux,** 1244 E. Broadway, Portland	.....	.....
Rainbow Appl. Mfg. Co. Rochester, N. Y.	"Rainbow"	285 325	37x20 53x20	30 46	GE GE	....	GE GE	1/6 1/6	G G	A A	1 1	$160	.....	.....	.....	Factory
Utensils Co. 303 E. Columbus St., Fort Wayne, Ind.	"Utenco"	310	2[illegible]x42	24	E G Gn	2750	GE	1/6	G	FC A	....	$185 $160 $170	.....	.....	**Listenwalter & Gough** Los Angeles **West Coast Sales Co.** Oakland	Los Angeles or Oakland
Western Electric Co. New York City	"Western Electric"	198	37x24	28	G	....	WE	1/10	G	FC HC	....	$125	$140	**Western Electric Co.** 680 Folsom St., San Francisco	**Western Elec. Co.** San Francisco, Los Angeles, Oakland, Portland, Seattle, Tacoma, Spokane, Denver, and Salt Lake City	All Branch Offices
F. B. Zieg Mfg. Co. Fredericktown, Ohio	"Buckeye"	350	24x48	46	E G Gn	2500	GE	1/6	G	FC	....	$140	$150	.....	**W. E. Dooley & Co.** Seattle, Wash.	Seattle

ELECTRIC RADIATOR AND HEATER DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1924.

A list of Electric Radiator and Heater Manufacturers giving catalog information on the equipment of each, with complete list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information, but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way, mention the **Journal of Electricity.**

Key to Abbreviations

B—Bronze
Br—Brass
C—Copper
Nk—Nickel
BS—Blue Steel
OI—Old Ivory
En—Enamel
Po—Portable
Pd—Pendant
St—Stationary
Fr—Fireplace
VM—Various Models

Name of Manufacturer	Trade Name	Dimensions in Inches	Reflector Dimen. (Inches)	Finish: Heater	Finish: Reflector	Type	Heating Element: Number of Elements	Heating Element: Total Wattage	Heating Element: No. of Heats	Heating Element: Removable Elements	Heating Element: Fits Edison Socket	Price: East	Price: West of Rockies	Western Sales Representatives	Western Distributors	Nearest Point at Which Repair Parts Can Be Secured.
Edison Elec. Appliance Co., Ontario, California.	"Hedlite"	20x15	14	B OI En	C	Po	1	630	1	Yes	Yes	.....	$3.50 to $16.50	**Edison Elec. Appl. Co., Inc.,** Sales Offices & Service Sta.: Ontario, Calif., San Francisco, Los Angeles, Portland, Seattle, Salt Lake City	All Leading Jobbers.	All Sales Offices and Service Stations
	(High Wattage)	VM	VM	En		Po	....	1000 to 5000	1 to 3	....	No	.....	$26.00 to $56.00			
Elec. Heatg. & Mfg. Co., Westlake & Republican Sts. Seattle, Wash.	"Circo-Flector"	15x9	9¼	C	C	Po	1	660	1	Yes	Yes	.....	$8.00	**Elec. Htg. & Mfg. Co.,** Seattle	**Eastern Mfrs. Co.,** Portland **Wholesale Electric Co.,** San Francisco **Seattle-Astoria Iron Wks.,** San Francisco **Cumberland Lgt. & Power Co.,** Cumberland, B. C., Canada All Leading Jobbers	Seattle
	"100% Radiator"	.....	....	En	....	Po	3 to 6	1200 to 8000	3 to 6	No	No	.....	$20.00 to $75.00			
	"Heet-feet"	19x32	16x 30	B	Nk	St	1	660 to 4000	3	Yes	No	$30.00 to 60.00	$25.00 to 50.00			
		19x16	16x 14	Nk	Nk	St	1		3	Yes	No					
	"100% Radiators"	19x24	....	En	Nk	Po	1	1200 to 8000	3	Yes	No	$25.00 to 80.00	$25.00 to 75.00			
Estate Stove Co., The Hamilton, Ohio	"Estate"	17x 8	9½	B	B	Po	1	660	1	Yes	No	$7.50	$8.00	**The Estate Stove Co.,** Furn. Exchge. Bldg., San Francisco	**The Estate Stove Co.,** San Francisco	Factory
Even Heat Elec. Co., 2429 Canton Ave., Detroit, Mich.	"Even Heat"	17x 9	....	En	N	Po	2	660	1	Yes	....	$9.50	.....	**Karpp Sales Co.,** 1160 Pine St., San Francisco	**Karpp Sales Co.,** San Francisco **Tacoma Mercantile Co.,** Tacoma **North West Sales Co.,** St. Paul, Minn.	St. Paul, Minn.
Fitzgerald Mfg. Co., The Winsted, Conn.	"Model C"	18x14	14	En	C	Po	1	600	1	Yes	Yes	.....	.....	**A. S. Chernoff Co.,** 41 Fell St., San Francisco		San Francisco
	"Model D"	17x12	12	En	C	Po	1	600	1	Yes	Yes	.....	.....			
A. C. Gilbert Co., The New Haven, Conn.	"Polar Cub"	13x11	11	En	C	Po	1	550	1	Yes	Yes	$5.00	$5.25	**H. E. Iblings,** 4816 Franklin Ave., Los Angeles	In all large cities.	Distributors
Haber Die & Stamping Co., Chicago, Ill.	"The Sun"	19x14	14	En	C	Po	1	575	1	Yes	Yes	$8.50	$8.85	**H. J. Gute & Co.,** San Francisco **R. M. Burton Sales Agcy.,** Alaska Bldg., Seattle **Leo Rabin,** 1516 S. Union Ave., L. A.		Sales Representatives
W. Wesley Hicks, Rialto Bldg., San Francisco **M. L. Hooper,** 4539 Hollywood Blvd., Los Angeles	"Wesix" "Radiant-Convection"	VM	....	.....	.....	Po St. Fr	VM	800 to 6000	3	.....	.....	$25.00 to $90.00	.....	**W. Wesley Hicks,** Mfgr. and Patentee, Rialto Bldg., San Francisco **M. L. Hooper,** Los Angeles	All Jobbers	San Francisco
Landers, Frary & Clark, New Britain, Conn.	"Universal" and "Thermax"	14x10 and 18x14	10 and 14	B	C	Po	1	625	1	Yes	Yes	$ .50 to $11.50	$ .50 to $11.50	**Landers, Frary & Clark** 335 New Call Bldg., San Francisco	**Electric Appliance Co.,** San Francisco **The Electric Corp.,** Los Angeles, Seattle, Portland	Service Stations, San Francisco, Los Angeles, Seattle
Majestic Elec. Appl. Co., Inc., 590 Folsom St., San Francisco	"Majestic" "Radiant"	16x12	11½	En	C	Po	1	615	1	Yes	Yes	$9.50	$9.50	**Majestic Elec. Appl. Co.,** San Francisco	All Jobbers	Jobbers
		19x14	12½	En	C	Po	1	615	1	....	....	$10.50	$10.50			
		15x15	....	Nk	C	Po	2	760	1	Yes	No	$25.00	$25.00			
		19x14	12½	En	C	Po	2	960	1	....	....	$13.50	$13.50			
	"Radiant-Convection"	17x22	....	B	....	St	....	2000	3	No	No	$40.00 to $115.00	$40.00 to $115.00			
		20x 8	....	Br	....	Fr	....	....	....	....	....					
		9x35	....	C	....	St	....	4000	....	....	....					
L. Pinut & Co. 432-E. 23rd St., New York City	"Double Ray"	7x8	8½	Br	C	Po	....	600	1	Yes	Yes	$8.50	$8.50	**Ralph A. Ryan** 417 Montgomery St., San Francisco	**Reiman Whsle. Elec. Co.** Los Angeles	New York City
Prometheus Elec. Co. 511-W. 42nd St., New York City	"Prometheus"	18x3	....	B	....	Po	5	1000	3	Yes	No	$25.50	$25.50	**M. E. Hammond,** Pacific Bldg., San Francisco		New York City
Russell Electric Co., 340 W. Huron St., Chicago, Ill.	"Hold Heet"	15½x 12	12½	En	C	Po	1	660	1	Yes	Yes	$7.50	$7.50	**W. H. Carter,** 1245 Broadway, San Francisco	**North Coast Elec. Co.,** Seattle, Tacoma, Portland **United Elec. Supply Co.,** S. L. C. **B. & R. Supply Co.,** Denver **Listenwalter & Gough,** Los Angeles and San Francisco **Dunham, Carrigan and Hayden,** San Francisco	Jobbers Stock
Rutenber Elec. Co., Marion, Ind.	"Marion"	18x13	11½	En	C	Po	1	615	1	Yes	No	$10.00	$10.00	**Atlantic-Pacific Sales Co.,** 646 Mission St., San Francisco	**Atlantic-Pacific Sales Co.,** San Francisco	San Francisco
Scheeline Mfg. Co., 76 Tehama St., San Francisco	"Hulbert"	VM	....	.....	.....	VM	VM	660 to 6600	....	.....	.....	.....	$35 to $250	**Scheeline Mfg. Co.,** San Francisco		San Francisco
Simplex Elec. Heatg. Co., 85 Sidney St., Cambridge, Mass.	"Sunbowl"	20x14	14	En	C	Po	1	600	1	Yes	No	$11.00	$11.00	**P. B. Miller,** 137 5th St., San Francisco	**Universal Elec. Co.,** S. F. **Reiman Whsle. Elec. Co.,** L. A. **Marshall-Wells Hardware Co.,** Portland, Ore. **Whiton Hardware Co.,** Seattle	Distributors
	"Sunbowl Jr."	13x11	10½	En	C	Po	1	600	1	Yes	No	$7.00	$7.00			

ELECTRIC RADIATOR AND HEATER DIRECTORY
(CONTINUED)

Key to Abbreviations
B—Bronze
Br—Brass
C—Copper
Nk—Nickel
BS—Blue Steel
OI—Old Ivory
En—Enamel
Po—Portable
Pd—Pendant
St.—Stationary
Fr—Fireplace
VM—Various Models

Name of Manufacturer	Trade Name	Dimensions in Inches	Reflector Dimen. (Inches)	Finish: Heater	Finish: Reflector	Type	Heating Element: Number of Elements	Heating Element: Total Wattage	Heating Element: No. of Heats	Heating Element: Removable Elements	Heating Element: Fits Edison Socket	Price: East	Price: West of Rockies	Western Sales Representatives	Western Distributors	Nearest Point at Which Repair Parts Can Be Secured.
Sparling Elec. Prod. Co. 2 Letchworth St., Buffalo, N. Y.	"Hot Glow"	20x20 30x30	....	....	C	Fr	3	1400	3	....	No	.....	.....	**Regan & Koehler,** 240 Rialto Bldg., San Francisco **P. C. Koehler,** 1207 Washington Bldg., Los Angeles		
Strait & Richards, Inc. Fabyan Place, Newark, N. J.	"Glolog"	16 20 24 30	....	Oak Logs	....	Fr	2	2000 2000 2000 3000	2	Yes	....	$30.00 35.00 40.00 50.00	$35.00 40.00 45.00 55.00	**Atlantic & Pacific Agencies Corp.,** Rialto Bldg., San Francisco	**Atlantic & Pacific Agencies Corp.,** San Francisco **Globe Elec. Sup. Co.,** 1843 Wazee St., Denver, Colo.	San Francisco
Westinghouse Elec. & Mfg. Co. 1st Natl. Bank Bldg., San Francisco	"Cozy Glow" "CozyGlow Jr." "Solar Glow" "D" Air Heaters	18x14 14x11 20x 19½ 16x12 12x 13½ 20x 13½ 27x 13½	B 11	En B B Po En En En En	C C	Po Po Fr Po St Po Po Po	1 1 1 1 1 2 3	660 660 2000 1200 1000 2000 3000	1 1 3 1 3 3 3	Yes Yes Yes Yes Yes Yes Yes	Yes Yes No No No No No	$10.50 6.50 37.50 25.00 18.00 24.00 30.00	$10.50 6.50 37.50 25.00 18.00 24.00 30.00	**Fobes Supply Co.,** San Francisco Portland, Seattle, Oakland **Illinois Elec. Co.** Los Angeles	**Westinghouse Agent Jobbers**	Jobbers & Dealers
Westinghouse Elec. & Mfg. Co. 1st. Natl. Bank Bldg., San Francisco	"Cozy Glow"	18x14	B	En	C	Po	1	660	1	Yes	Yes	$10.50	$10.50	**Fobes Supply Co.** San Francisco, Portland, Seattle, Oakland **Illinois Elec. Co.** Los Angeles	**Westinghouse Agent Jobbers**	Jobbers & Dealers
Xardell Corp. Utica, N. Y.	"A-Little-Warmer"	18x10	....	Nk	....	Po	1	660	1	....	....	$7.50	$7.50			Factory

VACUUM CLEANER DIRECTORY
Published and Copyrighted by the Journal of Electricity, October 15, 1924.

A list of vacuum cleaner manufacturers giving catalog information on the equipment of each, with complete list of Western distributing agencies, as well as points where repair parts may be secured. The publisher does not guarantee this information, but to the best of our knowledge and belief it is correct at date of publication. When referring to this list in any way, mention the Journal of Electricity.

Key to Abbreviations
SW—sweeper type
TR—truck type
ST—stationary type
Sh—switch on handle
Sc—switch on cord
Sm—switch on motor
Sf—switch on frame
R—rotating
Rg—gear driven
Rs—shaft drive
Rc—chain drive
Bm—belt to motor
Bw—belt to wheels
S—stationary
V—vertical mounted
H—horizontal mounted
GE—General Elec. Co.
Dom—Domestic Elec. Co.
R&M—Robbins & Myers
Wx—Westinghouse
Berco—Birtman Elec. Co.
t—eastern price plus freight
*—price includes attachments

Manufacturer	Trade Name	Weight (in lbs.)	Style	Brush	Motor: Make	Motor: H.P.	Motor: Mounted	Switch Control	Attachments	Retail Price: Attachments East	Retail Price: Attachments West	Retail Price: Cleaner East	Retail Price: Cleaner West	Western Sales Representative	Western Distributors	Nearest Point At Which Repair Parts May Be Secured.
Apex Electrical Mfg. Co., 1067 E. 152nd St., Cleveland, Ohio	"Apex"	10½	SW	ST	Own	1/12	H	Sh	7	$10.00	$11.00	$65.00	$67.50	**G. A. Buckley,** 1405 Walnut St., Kansas City, Mo.	**Fobes Supply Co.,** Seattle, Portland **Illinois Elec. Co.,** Los Angeles **Electl. Equipt. Co.,** Butte **Intermountain Elec. Co.,** Salt Lake City	Distributors
Birtman Electric Co., Lake & Desplaines Sts., Chicago, Ill.	"Magnetic Housecleaner"	12½	SW	S	Berco	1/6	H	Sh	6	.....	.....	$76.00	$76.00	**H. J. Gute,** Division Mgr., 150 Post St., San Francisco	**H. J. Conrad,** 317 No. Oxford St., Los Angeles **Chas. H. Hanke,** 150 Post St., San Francisco **J. B. Howell,** Berkeley **C. M. Mackenzie,** 1507 Cabrillo, Torrance, Calif. **L. A. MacLean,** Oakland **Thos. P. Reid,** San Diego	San Francisco
	"Bee-Vac"	11	SW	S	Berco	1/6	H	Sh	5	.....	.....	$39.75	$39.75	**H. J. Gute & Co.,** 150 Post St., San Francisco **J. F. Kitchen,** 1325 So. Harvard Blvd., Los Angeles	Through Leading Jobbers	San Francisco and Los Angeles
Clements Mfg. Co., 601 Fulton St., Chicago, Ill.	"Cadillac"	12	SW	S	Own	1/4	H	Sh	7	$10.00	$12.50	$55.00	$60.00	**S. F. Compressed Air Co.,** San Francisco, Los Angeles	**F. E. Spencer,** 733 W. 8th St., Los Angeles **Heyman-Weil Co.,** San Francisco **Ray Bentley,** 219 Worcester Bldg., Portland	From any distributor.
The F. Bissell Co., 812 Lafayette St., Toledo, Ohio	"Bissell New HomeCleaner"	12½	SW	....	Own	.....	H	Sh	8	.....	.....	.....	.....	**Shirey-Hilmer,** 324 13th St., Oakland	Same	**The F. Bissell Co.,** Toledo, Ohio
	"Bissell Super-Service"	....	SW	....	Own	1/3	H	Sm	7	.....	.....	.....	.....	.....	**A. S. Kedzie,** 737 Terminal St., Los Angeles	San Francisco and Los Angeles
	"Bissell School"	25	SW	....	Own	1/3	H	Sm	8	.....	.....	.....	.....			
The Eclipse Machine Co., Sidney, Ohio	"Eclipse"	10	SW	Rg	GE	.....	V	Sh	7	.....	.....	$45.00	$50.00	**Sprake Sales Co., Inc.,** American Bank Bldg., Los Angeles	Same	**Sprake Sales Co.,** Los Angeles and their branches.
Edison Elec. Appliance Co., 5600 Taylor St., Chicago, Ill.	"Hotpoint"	11	SW	S	GE	1/5	H	Sh	8	$10.00	t	$49.50	t	**P. H. Booth,** District Sales Mgr., Ontario, Calif. **B. E. Rowley,** District Sales Mgr., 60 East First South St., Salt Lake City		Ontario, Calif. 155 New Montgomery St., San Francisco 1526–8th Ave., Seattle 10 No. Broadway, Portland 60 East First South St., Salt Lake City

VACUUM CLEANER DIRECTORY
(CONTINUED)

Key to Abbreviations
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Dom—Domestic Elec. Co.
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Wx—Westinghouse
Berco—Birtman Elec. Co.
t—eastern price plus freight
*—price includes attachments

Manufacturer	Trade Name	Weight (in lbs.)	Style	Brush	Motor: Make	Motor: H.P.	Motor: Mounted	Switch Control	Attachments	Retail Price: Attachments East	Retail Price: Attachments West	Retail Price: Cleaner East	Retail Price: Cleaner West	Western Sales Representative	Western Distributors	Nearest Point At Which Repair Parts May Be Secured.
Elec. Vacuum Cleaner Co., Ivanhoe Road, Cleveland, Ohio	"Premier Duplex"	12¾	SW	Bm	GE type	1/10	H	Sh	8	$10.00	$11.00	$60.00	$65.00	**J. J. James,** 236 So. Los Angeles St., L. A. **Chas. A. Pearl,** 61 Fifth St. No., Portland, Oregon	**Pacific States Electric Co.,** San Francisco **Capital Electric Co.,** Salt Lake City	Pacific States Elect. Co., San Francisco, Los Angeles
	"Handy"	6½	S			1/8	H		6			$35.00	$40.00			
Eureka Vacuum Cleaner Co., Hamilton & Dewey Aves., Detroit, Mich.	"Eureka"	11	SW	S	Own	1/5	H	Sh	5	.....	.....	$45.00	$55.00	**Eureka Vacuum Cleaner Co.,** 128 Post St., San Francisco	**Woodill Hulse Elec. Co.,** Los Angeles **Poole Electric Co.,** 1206–4th Ave., Seattle **Eureka Vacuum Cleaner Co.,** 162 S. Post St., Spokane	From Factory Branch or from any Distributor.
Federal Electric Co., 8700 So. State St., Chicago, Ill.	"Federal"	11	SW	Rc	Own	1/6	V	Sh	6	$8.00	$8.50	$55.00	$55.00	**Federal Electric Co.,** 91 New Montgomery St., San Francisco	Same	All Pacific Coast Jobbing Points.
The P. A. Geier Co., 540 East 105th St., Cleveland, Ohio	"Royal"	11	SW	S	Dom	.....	H	Sh	8	$10.00	$13.50	$55.00	$60.00	.....	**J. G. Creighton Co.,** 53–4th St., Portland **Listenwalter & Gough, Inc.,** 819 E. 1st St., Los Angeles 940 Mission St., San Francisco	From any distributor.
Hamilton Beach Mfg. Co., 1501 Rapids Drive, Racine, Wis.	"Hamilton Beach"	15	SW	Bm R	Own	1/5	H	Sh	8	$13.00	.....	$52.50	$64.00	**Hamilton Beach Mfg. Co.,** Racine, Wis.	Sold direct to Dealers.	**H. L. Hudson,** 378 O'Farrel St., S. F. **Gans Bros.,** 141 S. Main St., Los Angeles
The Hoover Co., North Canton, Ohio	"Hoover" Model 103	16½	SW	Bm	Own	.08	V	Sm	7	$12.50	$13.50	$52.50	$60.00	**H. G. Glass,** Geary & Leavenworth Sts., San Francisco		San Francisco
	Model 541	15½	SW	Bm	Own	.09	V	Sm	7	$12.50	$13.50	$65.00	$74.00			San Francisco
	Model 961	30½	SW	Bm	GE	.17	V	Sm	7	$15.00	$16.50	$150	$160			San Francisco
Hurley Machine Co., 22nd St. & 54th Ave., Chicago, Ill.	"Hurley-Thor"	15½	SW	Rs	GE	1/7	V	Sh	8	$12.50	$12.50	$65.00	$70.00	**Hurley Machine Co.,** **J. W. Ferry,** 425 Rialto Bldg., San Francisco	**Thor Shops** 154–5th St., Portland 222 Pine St., Seattle 124 Post St., San Francisco 306 W. 7th St., Los Angeles Fox Theatre Bldg., Oakland	Thor Shops
The Kent Co., Inc., 583 W. Dominck St., Rome, N. Y.	"Kent Vacuna"	32, 48, & 72	TR & ST	S	Wx	1/5 & up	V	Sf	10 & up	.....	.....	$130 & up	$130 & up	**Illinois Electric Co.,** Los Angeles **F. A. Tanner,** 77 O'Farrell St., San Francisco	.....	Rome, N. Y.
Landers Frary & Clark, New Britain, Conn.	"Universal"	12	SW	...	Dom GE WX	1/8	H	Sh	7	$10.00	$10.00	$49.50	$57.50	**Landers Frary & Clark,** 335 New Call Bldg., San Francisco	**Through Jobbers** **Universal Service Station**	San Francisco, Los Angeles, Seattle
M. S. Wright Co., 164 Fremont St., Worcester, Mass.	"Sweeper-Vac"	15	SW	R & Rg	Dom	1/5	H	Sh	7	$10.50	$11.00	$57.50	$60.00	**F. W. Biven,** 362 Jayne Ave., Oakland	**Schleuter Commercial Co.,** 1175 Market St., San Francisco **A. Schleuter & Co.,** Oakland **A. A. Wilson,** Los Angeles **Sloat Wholesale Co.,** Portland, Ore.	
The Regina Corp., Rahway, N. J.	"Regina Electric Home Cleaning Machine"	12	SW	S	GE	1/9	..	Sh	8	.....	.....	$69.75 *	$69.75 *	**The Regina Corp.,** 589–13th St., Oakland, Calif. Also Los Angeles, San Bernardino, Santa Ana, California.	.....	Oakland, Los Angeles, San Bernardino, Santa Ana.
B. F. Sturtevant Co., Hyde Park, Boston, Mass.	"Sturtevant"	25 to 86	TR	S	.....	1/6 to 3	H	Sc	4 to 8	$33.00 & up	.....	$125 to $1122	.....	.....	**B. F. Sturtevant Co.,** San Francisco, Los Angeles, Portland, Seattle.	
The Torrington Company, Torrington, Connecticut	"Torrington"	12½	SW	R	GE	1/5	H	Sh	9	.....	$13.00	.....	$65.00	**W. H. Johnson & Co.,** 938 Mission St., San Francisco	.....	San Francisco
Wise, McClung Mfg. Co., for Sunshine Sales Co., New Philadelphia, Ohio	"Sunshine"	11½	SW	S	WX¼	1/4	H	Sh	6	.....	.....	.....	.....	.....	**United Vacuum Cleaner Stores,** Main Office, Fresno, Calif. **Mine & Smelter Supply Co.,** Denver, Colo. and Salt Lake City **Elec. Service Co.,** 181 Broadway, Portland and 702 Pine St., Seattle	Fresno, Denver, Salt Lake City, Portland Seattle
The Wise McClung Mfg. Co., New Philadelphia, Ohio	"America"	11½	SW	Bw	Arrow	1/8	V	Sf	6	.....	.....	.....	$65.00	**C. E. MacNichols,** 203–14th Ave. N., Seattle, Wash.	**Manufacturers Rep. Co.,** 74 New Montgomery St., S. F. **So. Cal. Appl. Co.,** Los Angeles **Salt Lake Hdwe. Co.,** Salt Lake **Elec. Service Co.,** Portland, Seattle **Burghardt & Hauff Elec. Co.,** 1007–1st Ave., Seattle **Salt Lake Hdwe. Co.,** Salt Lake City	San Francisco Los Angeles Salt Lake City Portland Seattle
	"Columbia"	11½	SW	Bw	Arrow	1/5	V	Sh	6	.....	.....	.....	$70.00	**Manufacturers Representatives Co.,** San Francisco and Los Angeles	**Manufacturers Representatives Co.,** San Francisco and Los Angeles **Getz Washer Sales.** Los Angeles	San Francisco and Los Angeles
M. S. Wright Co., Worcester, Mass.	"Western Electric"	15	SW	Bm	Dom	1/5	H	Sh	6	$11.50	$12.50	$57.50	$60.00	**Western Electric Co.**	**Western Electric Co.,** San Francisco, Los Angeles, Seattle, Portland, Denver, Salt Lake City	All offices.

ELECTRIC RANGE DIRECTORY

Published and Copyrighted by the Journal of Electricity, October 15, 1924.

A list of Electric Range Manufacturers giving catalog information on the equipment of each with list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way mention the **Journal of Electricity.**

Name of Manufacturer	Trade Name	Model or Catalog No.	Type of Unit O—Open C—Enclosed	Floor Area	Height from Floor	Oven Dimensions	HEATING UNITS: Dimensions — Surface: Large	Surface: Medium	Surface: Medium	Surface: Small	Surface: Simmerer	Oven: Oven	Oven: Broiler	Wattage — Surface: Large	Surface: Medium	Surface: Medium	Surface: Small	Surface: Total Watts Surface Units	Oven: Oven	Oven: Broiler	Total Maximum Wattage	Temperature Control A—Thermostat C—Clock	Oven E—Elevated C—Cabinet L—Low	Retail Price	Western Sales Representative	Western Distributors	Nearest Point at Which Repair Parts May be Secured
Edison Elec. Appliance Co., Chicago, Ill.	"Hotpoint Hughes"	RS- 67	O	28½x52½	57	18x18x14	8¼	6½	6½	6½	...	2-12x12	....	1500	1000	....	1000	4500	2-1500	....	7500	AC	C	$235.50	**Edison Elec. Appl. Co.,** Ontario, Cal. Los Angeles, Equitable Bldg., First and Spring Sts. San Francisco, 155 New Montgomery St. Seattle, 1526 Eighth Ave. Portland, 10 North Broadway Salt Lake City, 60 East First, St., South		All sales offices
		R- 67					"	"	"	"				"	"			6500	4-1500	....	12500			223.50			
		R- 79	O	28½x62¼	70	18x18x14	"	"	"	"		4-12x12	....	"	"		....	....					C	210.00			
		R- 75	O	28½x52½	64	"	"	"	"	"		12x12	12x12	"	"		....	1000	4500	2-1500	1500	9000		C	325.00			
		R- 63	O	"	41	"	"	"	"	"		"	"	"	"		....	....	3500	1500	"	6500			247.00			
		R- 85	O	28½x28¼	33	"	"	"	"	"		"	"	"	"		....	....	3500	"	"	6500		L	174.00			
		R- 87	O	"	"	"	"	"	"	"		"	"	"	"		....	1000	4500	"	"	7500		L	161.50			
		R-101	O	25 x44	41	16x12x18	6½	"	"	"		"	"	1000	"		....	....	3000	1200	1200	5400		C	175.00			
		R-105	O	21½x24	33	16x12x15	"	"	"	"		9x12	9x12	"	"		....	....	2000	1100	1100	4200		L	99.00			
		R-109	O	21½x37¼	"	"	"	"	"	"		"	"	"	"		....	....	3000	"	"	5200		L	76.75			
		R- 67	O	28½x52½	57	18x18x14	8¼	6½	6½	6½		2-12x12	....	1500	1000	....	1000	4500	2-1500	....	7500	AC	C	210.00			
		RA- 67	"	"	"	"	"	"	"	"		"	"	"	"		"	"	"	"	"	"		"	223.50			
		RS- 67	"	"	"	"	"	"	"	"		"	"	"	"		"	"	"	"	"	"		"	235.50			
		R- 79	"	28½x62½	70	"	"	"	"	"		4-12x12	....	"	"		"	"	6500	4-1500	....	12500		"	325.00			
		R- 75	"	28½x52½	64	"	"	"	"	"		12x12	12x12	"	"		"	"	4500	2-1500	1500	9000		"	247.00			
		R- 63	"	"	41	"	"	"	"	"		"	"	"	"		"	"	3500	1500	"	6500		"	184.00			
		RA- 63	"	"	"	"	"	"	"	"		"	"	"	"		"	"	"	"	"	"		"	197.85			
		RS- 63	"	"	"	"	"	"	"	"		"	"	"	"		"	"	"	"	"	"		"	212.50			
		R- 87	"	28½x28¼	33	"	"	"	"	"		"	"	"	"		"	"	"	"	"	7500		L	175.00			
		R-101	"	25 x44	41	16x12x18	6½	"	"	"		"	"	"	"		"	"	3000	1200	1200	5400		C	99.00			
		RA-101	"	"	"	"	"	"	"	"		"	"	"	"		"	"	"	"	"	"		C	125.00			
		R-105	"	21½x24	33	"	"	"	"	"		9x12	9x12	"	"		"	"	2000	1100	1100	4200		L	83.00			
		R-109	"	21½x37½	33	"	"	"	"	"		"	"	"	"		"	"	3000	"	"	5200		L	93.25			
Electrahot Appliances, Incl., 301 Fifth Ave. South Minneapolis, Minn	"E ectrahot"	B- 57	O	25 x43½	30	15x15x19	7½	7½	...	...	...	10x15	10x15	1500	1000	.....	.....	4500	1500	1500	7500	....	C	$135.00	**R. M. Burton** Alaska Bldg., Seattle		Seattle and San Francisco
Estate Stove Co., The Hamilton, Ohio	"Estate"	184	C	56½x26	58	18x18x12	8½	.....	.....	7	...	16¾x17¾ 4-6	(16¾x 17¾	1250	.....	.....	800	3650	3300	1500	9650	....	E	.....	**The Estate Stove Co.,** 839 Mission St., San Francisco		Factory
		E-184	"	56½x26	58	18x18x12	8½	.....	.....	7	...	16¾x17¾ 4-6	"	1250	.....	.....	800	3650	"	"	"	....	E	.....			
		188	"	56½x25	50	18x18x12	"	.....	.....	"	...	16¾x17¾ 4-6	"	1250	.....	.....	800	3650	3300	1500	7800	....	E	.....			
		76	"	40 x23	46¼	16x17x12	"	.....	.....	"	...	15¾x16¾ 3-12	"	1250	.....	.....	800	2850	3000	1300	6500	....	E	.....			
		181	"	53 x26	55	18x18x12	"	.....	.....	"	...	16¾x1 ¾ 4-6	"	1250	.....	.....	800	3650	3300	1500	7800	....	L	.....			
		E-181	"	53 x26	55	18x18x12	"	.....	.....	"	...	16¾x17¾ 4-6	"	1250	.....	.....	800	3650	3300	1500	7800	....	L	.....			
		179	"	66 x28	53	18x18x12	"	.....	.....	"	...	16¾x17¾ 4-6	"	1250	.....	.....	800	3650	3300	1500	7800	....	L	.....			
		H-283	"	29 x16	54	18x12x12	"	.....	.....	"	...	11¾x17¾ 2-6	"	1250	.....	.....	800	2850	2400	1000	5900	....	L	.....			
		180	"	40 x26	55	18x18x12	"	.....	.....	"	...	16¾x17¾ 4-6	"	1250	.....	.....	800	3650	3300	1500	7800	....	L	.....			
		E-180	"	40 x26	55	18x18x12	"	.....	.....	"	...	16¾x17¾ 4-6	"	1250	.....	.....	800	3650	"	"	"	....	L	.....			
		H- 78	"	28¾x18	43	12x11x17	8	.....	.....	6½	...	11¾x10¾ 1-8	"	1100	.....	.....	650	1750	1750	775	4250	....	E	.....			
Landers, Frary & Clark, New Britain, Conn.	"Universal"	E- 91	C	27 x43½	52	14x14x19	8¾	.....	.....	.....	...	.....	.....	1500	1000	.....	.....	4500	2000	1500	8000	....	E	$200.00	**Landers, Frary & Clark,** 335 New Call Bldg., San Francisco 1614 8th Ave., Seattle, Wash.	**Electric Appliance Co.,** San Francisco **The Elec Corporation** Los Angeles, Seattle and Portland **Marshall-Wells,** Portland, Ore.	Universal Service Stations San Francisco Los Angeles Seattle
		E- 92	"	"	58	"	"	.....	.....	.....	...	.....	.....	"	"	.....	.....	"	"	"	"	....	"	215.00			
		E- 95	"	"	40	"	"	.....	.....	6¾	...	.....	.....	"	"	.....	660	4160	"	"	7660	....	"	175.00			
		E- 96	"	"	51	"	"	.....	.....	"	...	.....	.....	"	"	.....	"	"	"	"	8210	....	"	190.00			
		E- 93	"	"	40	"	"	.....	.....	.....	...	.....	.....	"	"	.....	.....	3500	"	"	7000	....	"	165.00			
		E- 94	"	"	51	"	"	.....	.....	.....	...	.....	.....	"	"	.....	.....	3500	"	"	7500	....	"	180.00			
		E- 90	"	27 x29	61	"	"	.....	.....	6½	...	.....	.....	"	"	.....	"	4160	"	"	7660	....	"	150.00			
		E- 98	"	27 x23¾	38	"	"	.....	.....	"	...	.....	.....	"	"	.....	"	3160	"	"	6660	....	L	150.00			
		E- 99	"	"	"	"	"	.....	.....	.....	...	.....	.....	"	"	.....	.....	2500	"	"	6000	....	L	140.00			
A. J. Lindemann & Hoverson Co., Milwaukee, Wis.	L & H Electrics Both Full and Semi Porcelain Enamel	830	O	49 x26½	56	18x14x18	8	7⅛	...	6	...	13½x11	13½x 11	1750	1250	....	800	3800	3000	1800	8600	....	C	$204.00	**P. F. Ross** **Harry W. Lippert,** Room 245, Rialto Bldg., San Francisco	**Alexander & Lavenson,** 926 Howard St., San Francisco **Burton R. Stare Co.,** 619 Fourth Ave., Seattle, Wash. **Barker Bros.,** Los Angeles, Cal.	Manufacturers Warehouse, 516 Minnesota Street, San Francisco Oregon Transfer Co., Portland, Ore. Los Angeles Warehouse Co., Los Angeles, Cal. Taylor-Edwards Co., Seattle, Wash.
		831	"	"	"	"	"	"	"	"	...	"	"	"	"	.....	.....	"	"	"	"	A	"	232.40			
		832	"	"	"	"	"	"	"	"	...	"	"	"	"	.....	.....	"	"	"	"	AC	"	252.00			
		810	"	49 x26½	42	18x14x18	"	"	"	"	...	13½x11	....	"	"	.....	.....	"	3300	....	7100	....	C	168.00			
		811	"	"	"	"	"	"	"	"	...	"	....	"	"	.....	.....	"	"	"	"	A	"	196.00			
		812	"	"	"	"	"	"	"	"	...	"	....	"	"	.....	.....	"	"	"	"	AC	"	215.00			
		805	"	42 x23½	41	16x12x18	7⅛	.....	.....	.....	...	7½x13	....	1500	.....	.....	.....	4500	2500	.....	7000	....	C	104.51			
		805	"	"	"	"	"	.....	.....	.....	...	"	....	"	.....	.....	.....	"	"	.....	"	....	A	"	132.51			
		805	"	"	"	"	"	.....	.....	.....	...	"	....	"	.....	.....	.....	"	"	.....	"	....	AC	"	152.11			
		801	"	33 x18	56½	14x18x 12½	8	7⅛	...	6	...	7½x13	....	1750	1250	....	800	3800	2500	....	6300	....	L	140.00			

ELECTRIC RANGE DIRECTORY
(CONTINUED)

Magee Furnace Co., Boston, Mass.	"Electri-Coal"	.....	C	43¾x26¼	33	16x12x13	9	7	...	...	...	.....	.....	1500	1000	...	...	3500	1500	1500	6500	...	E	$550.00	**The T. G. Arrowsmith Co.,** 135 New Montgomery St., San Francisco	**Dealers and Central Stations**	San Francisco
	"Electric Alliance"	.....	C	.....	"	16x12x13	"	"	...	...	...	.....	.....	"	"	...	...	2500	"	"	5500	...	"	450.00 440.00 350.00			
Geo. D. Roper Corp., Rockford, Ill.	"Roper"	2001	C	43 x26	32	16x16x13	8½	8½	...	...	12x16	12x 8	1800	1000	...	...	4800	1650	1100	7500	...	...	.....	**C. B. Babcock Co.,** 768 Mission St., San Francisco **W. W. Hall & Co.,** 217—15th St., Denver	**C. B. Babcock Co.,** San Francisco **P. B. Taylor,** Marsh Strong Bldg., Los Angeles	San Francisco
		2002	"	38 x26	30	"	"	"	...	...	"	"	"	"	...	...	2800	"	"	5500	...	...	.....			
		2003	"	31 x26	33	"	"	"	...	...	"	"	"	"	...	...	4800	"	"	7000	...	...	.....			
		2022	"	43 x26	29	"	"	"	...	...	"	"	"	"	...	...	4800	.....	.....	7000	...	...	.....			
		2005	"	17½x17½	22	.....	"	"	...	...	.....	.....	1600	1000	...	...	3600	.....	.....	3600	...	...	.....			
		2009	"	28 x17	"	.....	"	"	...	...	.....	.....	"	"	...	...	2600	.....	.....	2600	...	...	.....			
		2012	"	40 x17	"	.....	"		...	...	.....	.....	"	"	...	...	1600	.....	.....	1600	...	...	.....			
Rathbone, Sard & Co., Aurora, Illinois	"Acorn"	E-61-5	E	20 x44	55	18x14x16	...	...	...	...	.....	.....	2000	1200	...	...	4400	3000	1500	8900	...	E	.....	.....	**M. S. Barnett,** 180 New Montgomery St., San Francisco **F. D. Barnett,** Portland and Salt Lake City	Portland, Ore.
		E-61-HE	E	20 x44	55	18x14x16	...	...	...	...	.....	.....	2000	1200	...	...	4400	3000	1500	8900	...	E	.....			
		2550	E	29 x44	55	18x14x18	...	...	...	...	.....	.....	2000	1200	...	...	5600	3000	.....	8600	...	L	.....			
Rutenber Elec. Co., Inc., Marion, Ind.	"Marion"	D- 90	O	22 x36	....	12x12x12	8	...	...	5½	...	7x 7	.....	1400	.....	....	660	2060	1320	.....	3380	A	E	$ 75.00	**Atlantic-Pacific Sales Co.,** 646 Mission St., San Francisco	**Through Leading Jobbers**	San Francisco
		126	"	18 x24	34	18x14x14	"	...	...	"	...	9x11	.....	"	1200	...	"	3260	2380	....	5640	"	L	98.50			
		135	"	22 x50	55	"	"	...	...	...	...	.....	.....	"	"	...	...	3800	"	....	6180	"	E	160.00			
		130	"	27 x51	"	18x14x16	"	...	...	...	...	.....	.....	"	"	...	...	"	2500	....	6300	"	"	170.00			
		145	"	"	62	"	"	...	...	...	...	.....	.....	"	"	...	...	5000	"	....	7500	"	"	180.00			
		150	"	27 x52	73	"	"	...	...	...	...	9x11	.....	"	"	...	...	"	"	2300	9800	"	"	207.00			
		147	"	27 x63	67	"	"	...	...	...	...	.....	.....	"	"	...	...	7600	"	....	12600	"	"	227.00			
		110	"	20 x26	38	18x14x14	"	...	...	...	...	.....	.....	"	"	...	...	3800	2380	....	6180	"	L	140.00			
		105	"	24 x26	"	18x14x16	"	...	...	...	...	.....	.....	"	"	...	...	5000	2500	....	7500	"	"	155.00			
Simplex Elec. Heating Co., 85 Sidney St., Cambridge 39, Mass.	"Simplex"	25	C	30 x22	32	18x17x11	8	...	...	...	15x16	10x18	1200	.....	...	...	3600	1200	:000	6800	...	L	$150.00	**P. B. Miller,** 137 5th St., San Francisco	**Universal Elec. Co.,** San Francisco **Holbrook, Merrill & Stetson,** San Francisco **Reiman Whle. Elec. Co.,** Los Angeles **Marshall Wells Co.,** Portland	Distributors
		26	"	34 x15	26	13x13x13	"	...	...	...	10x11	12x13	1200	.....	...	...	2400	600	1200	4200	...	E	75.00			
		27	"	51 x22	54	18x17x11	"	...	...	...	15x16	10x18	1200	.....	...	...	3600	1200	2000	6800	...	"	175.00			
		29	"	57 x22	"	"	"	...	...	...	"	"	1200	.....	...	...	4800	1900	"	8700	...	"	220.00			
Standard Electric Stove Co., Toledo, Ohio	"Standard"	.....	.....	.....	.....	.....	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	6700	A	E	.....	**W. M. Swartz,** Los Angeles	**Listenwalter & Gough,** **Woodill-Hulse Elec. Co.,** Los Angeles	Distributors
		756	O	26 x50	61	24x16x21	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	7700	"	"	.....			
		629	"	24 x34	61	11x14x19	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	5260	"	"	.....			
		939	"	.....	.....	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	.....	"	"	.....			
		.....	"	.....	.....	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	.....	...	"	.....			
		.....	"	.....	.....	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	.....	...	L	.....			
		.....	"	.....	.....	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	.....	...	L	.....			
		423-4	"	24 x33	61	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	5600	...	E	.....			
		.....	"	.....	.....	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	.....	...	L	.....			
		421	"	18 x26	49	11x14x16	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	5000	...	L	.....			
		.....	"	.....	.....	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	.....	...	"	.....			
		850	"	27 x46	53	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	5600	...	"	.....			
		.....	"	.....	.....	"	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	.....	...	"	.....			
		921	"	None	....	11x14x16	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	4000	...	E	.....			
		923	"	"	.....	11x14x19	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	5000	...	"	.....			
		951	"	24 x22	52	14x16x18	...	...	...	...	.....	.....	.....	.....	...	...	.....	.....	.....	7600	...	"	.....			
H. G. Weeks Mfg. Co., The Hamilton, Ohio	"Weeks"	52	O	23 x16	35	16x10x 9	...	7	...	...	9x12	9x12	....	440	...	...	880	1100	1100	3080	...	L	$ 71.75	**T. G. Arrowsmith Co.,** 135 New Montgomery St., San Francisco	**Central Stations and Dealers**	San Francisco
		44	"	24 x17	38	18x14x12	9	"	...	...	"	"	1200	"	...	...	2400	1200	1200	4800	...	"	105.00			
		46	"	"	"	"	"	"	...	...	"	"	"	"	...	...	"	"	"	"	...	"	93.00			
		236	"	"	"	16x14x11	"	"	...	...	"	"	"	"	...	...	"	"	"	"	...	"	75.00			
		S- 64	"	26 x20	"	18x18x12	"	7	...	...	"	"	"	600	...	...	3000	1500	1500	6000	...	"	159.00			
		C-114	"	44 x24	33	16x18x12	"	"	...	...	14x14	14x14	"	"	...	...	"	"	"	"	...	E	186.00			
		105	"	39 x24	38	18x18x12	"	"	...	...	"	"	"	"	...	...	"	"	"	"	...	"	217.00			
		C-354	"	47 x22	33	18x18x15	"	"	...	...	"	"	"	"	...	...	"	"	"	"	...	"	210.00			
		454	"	"	"	"	"	"	...	...	"	"	"	"	...	...	3600	"	"	6600	...	"	222.00			
Walker & Pratt Mfg. Co., Boston, Mass.	"Crawford"	18-70	O	26 x49½	32	18x17x13	10	8	...	...	7½x12	7½x12	2000	1500	....	1000	5000	2000	2000	7000	...	E	$195.00	**B. Y. Gibson,** 680 Folsom St., San Francisco	**Western Elec. Co.,** San Francisco, Los Angeles, Oakland, Portland, Seattle, Tacoma, Spokane, Denver, and Salt Lake City	Distributors
		18-70	C	"	"	"	8½	7	...	...	"	"	1500	.....	...	"	"	"	"	7000	...	"	219.00			
		18-60	O	26 x28½	"	"	8	...	...	...	"	"	"	.....	...	"	"	2500	1500	7500	...	L	170.00			
		18-60	C	"	"	"	8½	7	...	...	"	"	"	.....	...	"	"	"	"	7500	...	"	194.00			
		18-50	O	16½x28½	"	18x12x13	8	...	...	...	"	"	"	.....	...	"	2500	2000	1000	4500	...	"	135.00			
		18-50	C	"	"	"	8½	7	...	...	"	"	"	.....	...	"	"	"	"	4500	...	"	147.00			
		16-80	O	23 x41	32	16x17x14	8	...	...	...	"	"	"	.....	...	"	3500	1500	1500	6500	...	E	122.00			
		16-80	C	"	"	"	8½	7	...	...	"	"	"	.....	...	"	"	"	"	6500	...	"	140.00			
Westinghouse Elec. & Mfg. Co., San Francisco, Cal.	"Westing-house"	B-3-19	O	43 x25	59	18x13x16	10	8	...	...	14x 8	14x8	2000	1000	...	....	4000	1500	1500	8000	A-C	E-L	$220.00	**Westinghouse Elec. & Mfg. Co.,** San Francisco, Seattle Los Angeles and Portland Seattle, Spokane Salt Lake, Tacoma, Tucson, Butte, Casper, Wyo., Denver, El Paso, Fresno	**Fobes Supply Co.,** San Francisco, Oakland Seattle and Portland **Illinois Elec. Co.,** Los Angeles	Distributors
		B-2-19	"	32 x24½	34	"	10	8	...	...	"	"	"	.....	...	....	"	1500	1500	7000	A	L	150.00			
		515	"	24½x16½	31	12x16x12	...	...	...	...	.....	.....	1500	.....	...	....	3000	1000	1000	5000	A	L	60.00			
		Jr. Cab.	"	37½x26½	48½	14x14x 17½	8	8	6	...	14x 8	14x 8	1500	1000	...	....	3500	1500	1500	6500	AC	EC	140.00			

The COAST Outlet
ELECTRICAL CONSTRUCTIONISTS' and DEALERS' NEWS

A Practical System of Accounting for Contractor and Dealer

By F. V. Mitchell

As stated on page 250 of the Oct. 1 issue of the Journal of Electricity, the net profit to date as shown on the Profit and Loss Statement during the calendar year is added to Capital Account on the Balance Sheet in accordance with Table I:

TABLE I
Balance Sheet, Aug. 31, 1924

ASSETS

Account No.				
	Current			
1	Cash in Bank		$1,500	
2	Petty Cash Fund		100	
3	Accounts Receivable—			
	Finished	$10,000		
	Unfinished	7,500		
		$17,500		
3a	Less Provision for Doubtful Accounts	1,000	16,500	
4	Notes Receivable		500	
10	Merchandise Inventory—Book Value—			
	Wiring	3,000		
	Fixtures	7,000		
	Store	5,000	15,000	
15	Work in Process—			
	Wiring	4,000		
	Fixtures	2,000	6,000	
			$39,600	
16	Less Unfinished Contracts		9,500	$30,100
	Fixed			
20	Automobiles	$2,500		
20a	Less: Provision for Depreciation	800	$1,700	
21	Furniture & Fixtures	2,000		
21a	Less: Provision for Depreciation	400	1,600	
22	Tools & Equipment	1,000		
22a	Less: Provision for Depreciation	200	800	4,100
			Total Assets,	$34,200

LIABILITIES

30	Accounts Payable	8,500	
31	Notes Payable	6,000	
32	Accrued Payroll	500	
	Total Liabilities,		$15,000

Net Worth

40	Capital Account	$12,000		
41	Personal Account	200	$12,200	
	Add Net Profit, 1-1-'24 to 8-31-'24		7,000	$19,200
	Total Liabilities & Net Worth,			$34,200

All the amounts contained in the statement shown in Table I represent the balances as they appear in the respective ledger accounts, debit balances representing assets and credit balances representing liabilities. The total amount of Unfinished Contracts appearing as a credit balance in Account No. 16 is shown on the Balance Sheet as a deduction from Current Assets. This is done for the reason that the amount uncollected on these unfinished contracts is shown as a current asset under Accounts Receivable, and also because the amount of material, labor and overhead that have been put into these unfinished contracts is included as a Current Asset under Work in Process. The effect is as shown in Table II:

TABLE II

Accounts Receivable—Unfinished	$ 7,500	
Work in Process	6,000	
	$13,500	
Less Unfinished Contracts	9,500	
Balance,		$4,000

As readily can be seen, the amount of $4,000, shown in Table II, represents the balance uncollected on material, labor and overhead costs (called Work in Process—$6,000) that have been put into these unfinished contracts up to Aug. 31, 1924. In this way only the actual amount due at cost on unfinished work is included in the Net Current Assets, but the total value of unfinished contracts is also set forth in proper manner, the latter information naturally being a matter of mutual interest when the statement is reviewed for credit purposes. The amount of Accounts Receivable—Unfinished is obtained from the Work in Process Summary, an illustration of which appeared as Fig. 2 on page 136 in the Aug. 15 issue of the Journal of Electricity.

After adding the net profit for the number of months to date in the calendar year to the Capital Account, the present net worth of the business is ascertained, which amount when added to the total liabilities equals the amount of the total assets. This constitutes a final proof that the Profit and Loss Statement and Balance Sheet have been prepared correctly.

The Profit and Loss Statement showed a net profit of $7,000 and the Balance Sheet shows a corresponding increase in net worth of $7,000, which proves very conclusively the correctness of this figure. However, a common question asked after noting that there was a net profit made during a period is, "Where did the profits go?" That is, what disposition was made of the profits during that period? There is no clearer explanation of this feature of the business than through the means of what is commonly called a Comparative Balance Sheet. Table III shows the method of preparing one of these forms.

Any profits made during a period must be reflected in the Balance Sheet by net increases in assets and net decreases in liabilities between the beginning and ending of the period under observation, or net increases in assets over net increases in liabilities, unless the proprietor has drawn out more than the salary allowance included as expense of the business. In Table III, such was not the case and the example shows very clearly that there were increases in various assets amounting to $5,000 and decreases in liabilities amounting to $2,000, the addition of the two amounts equaling the total net profit of $7,000 for the period. This is one of the most valuable statements that can be prepared for the management of the business as it enables them to keep their finger right on the pulse of the situation and take up the necessary corrective methods to reduce amounts that may be piling up in the wrong direction. Close attention to and prompt action upon a comparative statement of this nature will help materially to relieve the financial stringency of any business.

TABLE III

COMPARATIVE BALANCE SHEET

Assets	8-31-'24	1-1-'24	Increase	Decrease
Cash in Bank	$ 1,500	$ 1,250	$ 250	
Petty Cash Fund	100	100	.....	
Accounts Receivable (net)	16,500	15,000	1,500	
Notes Receivable	500	250	250	
Merchandise Inventory	15,000	12,500	2,500	
Work in Process	6,000	5,500	500	
Automobiles (net)	1,700	1,700	.....	
Furniture & Fixtures	1,600	1,600	.....	
Tools & Equipment	800	800	.....	
	$43,700	$38,700	$5,000	
Less Unfinished Contracts	9,500	9,500	.....	
Total Assets	$34,200	$29,200	$5,000	
	$29,200			
Net Increase in Assets	$ 5,000			
Liabilities				
Accounts Payable	$ 8,500	9,500	.....	$1,000
Notes Payable	6,000	7,000	.....	1,000
Accrued Payroll	500	500	.....	.....
Personal Account	200	200	.....	.....
	$15,200	$17,200	.....	$2,000
		15,200		
Net Decrease in Liabilities		$2,000		
Net Increase in Assets		5,000		
Net Profit 1-1-'24 to 8-1-'24		$ 7,000		

INDUSTRIAL NEWS

Construction on High Head Plant Is Nearly Completed

Construction on the Leevining Creek No. 1 hydroelectric project of the Southern Sierras Power Company has been practically completed and final tests are being made. The plant, located at an elevation of 8,000 ft. in the Sierra Nevada Mountains draws water from reservoirs at elevations above 9,000 ft. The natural reservoir from which the supply is taken directly is Saddlebags Lake. The capacity of this reservoir has been increased to 10,000 acre-ft. by a 30-ft. rock fill dam with timber face.

The static head on the plant is 1,675 ft. which is developed in a single penstock varying from 48 in. in diameter at the upper end to 24 in. at the power house. The plant contains a single 10,000-kva. generating unit mounted on the shaft of a 14,000-hp. single overhung impulse wheel. This wheel is one of the largest units ever equipped with a deflector of the sleeve type for controlling speed.

Current is delivered over a 110,000-volt wood pole transmission line to the company's power line at Rush Creek, 22 miles away. Steel core aluminum conductors are supported on poles 50 to 65 ft. in height.

Green River Site Applied For by Utah Power Company

Further development of the power possibilities of the Green River is planned by the Utah Power & Light Company. An application has been filed by that company with the state engineer of Utah for permission to use 5,500 sec.-ft. of water from the river for generating electric energy.

The company proposes to utilize the Split Mountain district, fifteen miles east of Vernal, in Uintah County. Construction of a dam 225 ft. high which will back the water up for miles and form a reservoir with an estimated capacity of 200,000 acre-ft. will be undertaken. The water will be stored from Feb. 1 to July 1. Through a diversion tunnel 24 ft. in diameter and 4,000 ft. long, water will be conveyed to the proposed power site, several miles downstream, where power will be generated under a 270-ft. head. At a point about seven miles upstream from the town of Jensen the water will be returned to the stream.

Irrigationists Lose in Fight for Third of River Flow

A decision stating that the Mt. Shasta Power Corporation, a subsidiary of the Pacific Gas and Electric Company, has the right to the full flow of Fall River, in northern California, has been handed down by Judge Charles J. Luttrell of the Shasta County superior court. The power company is being fought by the Fall River Irrigation District which claims the right to one-third of the flow of Fall River for irrigation purposes.

The power company claims the right to the entire flow of the river, at its tunnel diverting Fall River to Pit No. 1 plant, inasmuch as it has acquired all the riparian rights along Fall River from its confluence with Pit River upstream to the tunnel intake. If the district were given the right to divert one-third of the flow of the river, the potential capacity of Pit No. 1 plant would be reduced accordingly.

The issue at stake is purely a legal one and it is understood that the irrigation district will appeal the case to get a decision from the supreme court.

Roosevelt Dam Plant Cacapity Increased.—Installation of a 10,000-hp. addition to the Roosevelt Dam plant on the Salt River, Ariz., of the Salt River Valley Water Users' Association, has been completed. The capacity of the plant is now 23,000 hp. In addition to the Roosevelt plant the association has four hydro plants with a combined capacity of 10,500 hp. and has under construction on the Salt River, 27 miles below Roosevelt, the Mormon Flat Dam, which is 80 per cent complete. This dam will rise to a height of 221 ft. and will impound 98,000 acre-ft. of water. The association has also started construction on the Horse Mesa Dam 17 miles below the Roosevelt Dam. This dam when completed will be 307 ft. high and 40,000-hp. in generating capacity is contemplated. The Inspiration Consolidated Copper Company has recently signed a twenty-five-year contract with the association by which the company becomes the largest single user of electrical energy in Arizona.

Site for Step-Up Station Purchased.—The Pacific Gas and Electric Company has purchased 80 acres of land at Panorama Point, in the vicinity of Redding, Calif., to be used as a site for a substation. The transformers in the station will be designed to step-up voltage from 110,000 to 220,000 volts. The substation will receive energy from the Copco No. 2 plant of The California Oregon Power Company at the lower voltage and will raise it for transmission via the 220,000-volt line leading from Pit No. 1 plant to Vaca-Dixon substation. The new substation will be 35 miles from the terminus of the line being built by The California Oregon Power Company and this distance will be bridged by a 110,000-volt line to be built by the Pacific Gas and Electric Company.

Insulator Tests Are Carried On by Oregon College

Cooperating with the overhead systems committee of the Northwest Electric Light and Power Association, the Oregon Agricultural College, Corvallis, Ore., is making tests on 11,000 to 66,000-volt insulators of different manufacture. The tests, which are to be carried on under the direction of F. O. McMillan, associate professor of electrical engineering, embrace those of the A.I.E.E., and consist of tests for dry flashover, wet flashover, corona formation voltage, puncture, and a strain test combined with a voltage equal to 85 per cent of the dry flashover voltage.

Such tests were recommended by last year's committee on overhead systems with a view to giving "the engineer some data on which to base studies in dealing with the ratings shown by the manufacturers in their catalogs," and this year's committee is carrying out this recommendation. The manufacturers have willingly cooperated and have supplied a number of each size of insulator within the range specified sufficient to provide several for each test.

Electric Transportation Society Elects New Officers

The Electric Transportation Association, of San Francisco, Calif., at the monthly meeting held in the Fairmont Hotel, Oct. 9, elected officers for the ensuing fiscal year. The meeting was attended by all but two members, who were absent from the city. Eugene Kower, of the Electric Storage Battery Company, was elected president and Arthur Walthew, of the Autocar Sales & Service Company of California, vice-president. C. D. Monteith, of the Pacific Gas and Electric Company was made secretary-treasurer while W. J. Walsh, of the Great Western Power Company, was named assistant secretary-treasurer. The auditing committee named by the new president is composed of H. C. Cleveland, C. G. Scott and R. C. Griffin.

Line Extended to Mine.—The Eastern Oregon Light & Power Company, Baker, Ore., is extending a 22,000-volt line from Hanover, an old mining camp five miles north of Sumpter, to the Ibex mine, a distance of about four miles. The line, which traverses the rugged Blue Mountain country, has an average span of 300 ft., and the conductors are ¼-in., double-galvanized, Siemens-Martin, steel-strand cables. The present load of 125 hp. will be served through two 75-kva., 22,000-2,300-volt transformers, but space is provided for a third transformer to be installed when an increase in load warrants it.

Temporary Rate Increase Denied Edison Company

California Commission Reverses Original Decision Granting 10 Per Cent Increase for Period of Eight Months

The application of the Southern California Edison Company for a temporary rate increase, to cover extraordinary operating expense due to abnormal drouth conditions, has been denied by a decision of the California Railroad Commission issued Oct. 11. The decision was on a rehearing of the application of the Edison company and reverses the original decision, made Aug. 1 (Journal of Electricity, page 142, Aug. 15, 1924), which granted to the company an increase of 10 per cent for a period of ten months from Sept. 1, 1924. A rehearing of the original case was demanded by the minority commissioners, Clyde L. Seavey and Egerton Shore, and by J. T. Whittlesey, one of the majority. In the present case the original minority has become the majority through the addition of the vote of Commissioner Whittlesey. A minority dissenting report has been made on the present decision by Commissioners Brundige and Martin who hold that the company is entitled to an increase in rates.

There is no controversy in the two opinions as to the major facts of the proceeding. All members of the commission are agreed that the Edison company will collect approximately $5,000,000 less under the existing rates than it would have collected under normal conditions. The division is solely on the question as to whether the company should be allowed an increase of rates, to meet in part the deficiency in its earnings below normal year earnings, or whether the company should absorb all the deficiency itself.

In denying the increase of rates to make up this deficiency in earnings, the majority decision states that additional evidence was brought out at the re-hearing indicating that there will be more power available for distribution by the company than was expected at the time of the original hearing, and that this will increase the company's revenue to a corresponding extent. Much of this energy, however, will come from expensive sources, resulting in an increase of operating expenses. It is stated that the estimated result is not changed substantially from that shown in the original presentation.

The majority decision points out that as the result of a rate proceeding for this company in 1920 a contingency reserve was established to absorb fluctuations in operating expenses occasioned by variations in the supply of hydroelectric power, and changes in the price of fuel oil. The decision states that for several years the company, the Railroad Commission, and the public have accepted the principle that rates should be fixed upon the basis of average water power conditions. Variations in operating expense during the last few years have been absorbed by the company through the medium of this contingency reserve. Had 1924 conditions not been so extreme, it is asserted, there is no doubt that the resulting expense would also have been absorbed by the company without asking relief, even though in so doing the company somewhat more than exhausted the contingency reserve.

In denying the request for special consideration the majority decision observes that no claim has been made that these large and unusual expenses are not being made in the public interest, or that the company is seeking a selfish advantage in making them, but:

"* * * The policy of considering wet and dry years upon an average basis having been adopted and having given satisfactory results for a number of years, it is apparent that the present year should be taken into the average rather than given special treatment if, by so doing, no detriment to the public interest results."

The decision further states that it is realized that without an increase of rates the company will be unable to sell any bonds for approximately one year, but this is the result of mortgage provisions rather than market conditions. It is contended that the denial of the application will not seriously affect the company's ability to proceed with necessary construction work, or materially increase the average cost of money to the company. The financial position of the company is unusually strong, it is pointed out; the money it has borrowed is protected by a substantial stock equity and its floating debt is not excessive.

It is asserted that even though the company will earn much less than the normal net revenue, the present year should be treated as but one of many years going to make up the average conditions upon which rates are based, and that the requested increase should be denied.

Commissioners Brundige and Martin in the dissenting opinion pointed out that actual operating figures for May, June and July were used in the rehearing, instead of the estimated figures for those months used in the original hearing, and showed a slightly lower percentage of return to the company than had been estimated in the original decision, granting the increase in rates.

The dissenting members emphasize that there is no dispute as to the fact that it will cost the Southern California Edison Company approximately $5,000,000 more to serve its consumers in 1924 than it would have cost during average water conditions. The disagreement is over the question of what shall be done about it.

The lack of rainfall is pointed out as the most serious in 40 years. Despite the drouth, and that all industries were forced to reduce their demands, it is estimated that the company's sales will exceed those of 1923 by approximately 17 per cent, and those of 1922 by 53 per cent, due to rapid development of the territory served. However, the shortage of hydroelectric power was 820,000,000 kw-hr., or 53½ per cent below the amount that should have been produced under normal conditions.

To make up this shortage the company ran all its steam plants to capacity, and reopened its Santa Barbara and Visalia steam plants, which had been thrown out of the rate base by the Railroad Commission in establishing the present rates. It also leased and rehabilitated every private steam plant available, including the Pacific Electric plant that had not been used for several years. So great was the necessity and so imperative the demand, that much of the purchased power cost the company more than it received for it.

Although the Railroad Commission estimated in fixing present rates that the company would earn 7½ per cent on the rate base allowed by the commission, the minority members state, the effect of the dry year will be to reduce the earnings $4,053,000 below the estimated 7½ per cent return. After using all of the contingency reserve, amounting to $1,581,000, the company is still $2,472,000 short of the 7½ per cent return, out of which the company must pay all interest on funded and floating debt, interest upon re-invested depreciation reserve, amortize its debt discount, and expense, and pay dividends on its stock.

The original decision in the proceeding would have granted the company a 10 per cent increase in rates for a period of eight months, or $1,100,000. This amount added to the $1,581,000 in the contingency reserve would have permitted the company to earn 6¾ per cent on the investment in the property devoted to the public service. The original decision would have divided between the company and the rate-payers on a 50-50 basis the extraordinary expense of the company in serving the public. The minority ruling on the original hearing proposed to throw all of that burden on the company. The minority having become the majority in the re-hearing decision now propose to spread this deficiency over a long period of years, the dissenting opinion states.

The dissenting members object to doing this, stating that it would result in consumers, who will receive little if any benefit at all from the increased expenditures, being required to pay over a long period of years for the company's 1924 deficiency in revenue. This would, in effect, they say, leave in the hands of future commissions the duty of reimbursing the company for necessary and admitted expenditures, which in equity, the company is entitled to be reimbursed for now. They point out that the present commission will have no power to bind its successors to such a course. In concluding they say:

"Economic conditions and price levels change from time to time. Utility rates, to be fair alike to consumers and the company, must change also. It is not possible that any commission can fix rates so as to spread the losses of 1924 over a period of forty or even of twenty years. If this were possible, in our opinion, it would be undesirable. In effect, the result can only be to deny the company any reimbursement for its extraordinary expenditures.

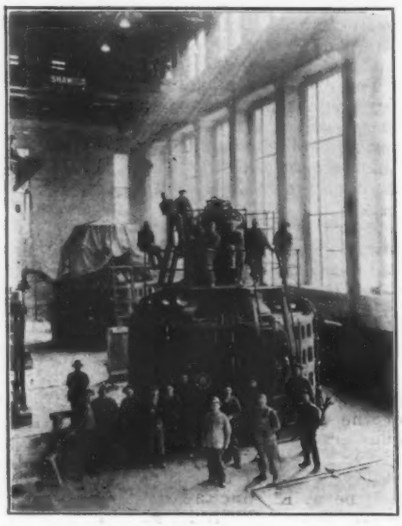
"We feel that if some consideration is not to be given to the extraordinary cost incurred in purchasing and in producing power to keep the wheels of industry moving as rapidly as possible this year, and if all these extraordinary expenditures must be borne in their entirety by the company, there will be little, if any, incentive, under similar conditions in the future, for any utility to go to such lengths and incur such costs as did the Southern California Edison Company this year in its endeavor to serve its consumers."

First Unit of Skagit Project Formally Started

Gorge Plant of City of Seattle Is Officially Put in Service and Dedicated with Ceremonies on Sept. 27

With the pressing of a button in Washington, D. C., by President Coolidge, the first unit of the Skagit development of the City of Seattle, Wash., was formally put in service on Sept. 27. The ceremonies were held after several weeks of testing during which period each phase of the plant's operation was tried out and pronounced in first-class condition.

The Gorge plant, comprising the first unit of this development, is located on the Skagit River about 100 miles northeast of Seattle. A timber-crib dam,



Interior view of Gorge plant showing two 30,000-kva. generators.

263 ft. long at the top, with a maximum height of 30 ft., raises the low water level of the river 25 ft. This is a temporary dam, since the completed project contemplates a permanent masonry dam at this point, 130 ft. above the river bed, which would add approximately 100 ft. to the present head of 285 ft. The permanent dam is to be located a few hundred feet downstream from the present dam.

A temporary intake tunnel, 17 ft. in diameter, protected by steel trash racks, diverts the water into a concrete lined pressure tunnel through the solid granite of the adjacent canyon wall. The tunnel is 11,000 ft. long and has an inside diameter of 20 ft. 6 in. Within 300 ft. of the power house the tunnel connects with three 10-ft. steel penstocks, encased in concrete. In the tunnel line, 1,000 ft. from the power house, is located the surge tank, which extends vertically above the tunnel to a height of 330 ft., bringing it to the approximate elevation of the proposed masonry dam. Each unit of the present plant will take 900 sec.-ft. of water at the higher head to develop its full capacity of 30,000 kva. At the present head, each unit will develop 16,000 to 20,000 kva. The tunnel is designed to carry 3,000 sec.-ft. of water.

In each penstock at its entrance to the turbine is installed a 10-ft. Johnson valve, remote-controlled from the switchboard room. The units installed are two 37,500-hp., S. Morgan Smith, vertical reaction turbines which are connected to two Westinghouse 11,000-volt, 257-r.p.m., vertical generators, rated at 30,000 kva. Each unit is equipped with an S. Morgan Smith governor, controlling the wheel gates and automatically opening a pressure relief valve in case of excessive hydraulic pressure. The relief valves, which will carry 85 per cent of the flow of water, are likewise of S. Morgan Smith manufacture and design. Space in the present building is provided for a third water wheel and generating unit identical with the two now in service.

The switchboard is a Westinghouse, bench-type board, having a panel for each machine, one for the third unit, and one for the tie line when a second transmission line is built. For each machine there is provided a transformer bank consisting of three 10,000-kva., 11,000-165,000-volt, oil and water cooled, single bushing type, Westinghouse transformers. Eleven thousand-volt oil switches are cut in between the generators and the transformers, and 165,000-volt oil switches, between the transformers and the line. These are remote-controlled from the switchboard. Air gap disconnects complete the switching equipment. The 11,000-volt bus is of stranded copper cable with varnished cambric insulation. The 165,000-volt bus is of galvanized iron pipe. Station service is supplied through a 2,500-kva. bank of 11,000-6,600-volt, Westinghouse transformers, while two smaller banks supply 440-volt, 220-volt and 110-volt service to the various motors and the lights.

Among the auxiliary equipment are a 250-kw. motor-driven exciter, a 150-ton Shaw crane, oil pressure systems for governors and for machine lubrication, suitable current and potential transformers, and three Westinghouse voltage regulators, one being a spare.

Interior view of 20-ft. 6-in. tunnel leading to the first unit of the Skagit development of the City of Seattle. The upper ends of the penstocks are in the background.

Because of the severity of the winter weather, all generating, transforming, switching and auxiliary equipment is housed within the concrete power house building, 130 ft. long, 70 ft. wide and 90 ft. high.

The 165,000-volt, single-circuit, 100-mile transmission line connecting the Gorge plant with North substation in Seattle, is strung on two-pole wooden towers, of H-type construction. Within the city limits the conductors are suspended on cables swung between poles located on either side of the street. The conductors are 477,000 circ. mil, stranded aluminum cable with steel core. North substation, which was constructed as part of the Skagit development, contains three 10,000-kva. transformers to handle the present Skagit output.

The Skagit development, as it stands today, including construction railroad, Newhalem plant, North substation, Gorge plant and transmission line, has cost $12,680,000, including interest during construction.

Rocky Mountain Men Active in Home Lighting Campaign

According to a recent report of Clare N. Stannard, Rocky Mountain regional director for the Better Home Lighting Campaign, 110 communities in that territory have agreed to participate and of that number 22 started their local contests Oct. 1. The Public Service Company of Colorado, the largest central station in the region, has arranged the contest in each of the 52 towns it serves and the Southern Colorado Power Company is second in standing. The only large city in the state from which reports have not been received as yet is Trinidad, Colo.

In Denver, the Electrical Cooperative League of that city is supervising the campaign and is also aiding the suburban central stations operating independent contests. The Denver activity will start Oct. 20 and continue for 30 days. Distribution of literature will be made through electrical stores and others instead of through the schools, according to S. W. Bishop, manager of the league. Charles A. Semrad, commercial manager of the Public Service Company of Colorado, is serving as Colorado state director of the campaign with E. H. Coe of the same company as his assistant with the latter in general charge of the activity in the various districts of the company.

A meeting of the leading utility operators in New Mexico was held in Albuquerque, Oct. 10, under the guidance of Arthur H. Prager, director in that state, to consider means of expediting the contest and securing the cooperation of additional companies.

Rain Falls in California.—Approximately half an inch of rain fell in California during the storm which visited that state Oct. 5 and 6. Snow also fell in the Sierra and there is approximately 6 in. at Summit at the present time. At Huntington Lake, the Southern California Edison Company reported that there had been a precipitation of 0.8 in. and that there was about 6 in. of snow on the ground. The rain also helped in the agricultural districts of the state. Where rain fell in the mountains there was little run-off due to the dryness of the ground.

Northwest Ties in with Home Lighting Movement

A. C. McMicken, Regional Director, Has Districts Organized and Committees Functioning Throughout Five States

Under the direction of A. C. McMicken, sales manager of the Portland Electric Power Company, Portland, Ore., the Better Home Lighting Campaign is getting under way and will be put on in virtually all the districts of the Northwest. Owing to the scattered nature of the territory included and the distances from headquarters of some of the larger centers, it was found advisable to subdivide the regional director's work, and P. M. Parry, commercial manager of the Utah Power & Light Company, Salt Lake City, has been made state director for Utah, and J. F. Orr, sales manager of the Idaho Power Company, Boise, Idaho, state director for Idaho.

Due to the absence of electric clubs and leagues generally over the Northwest, it was found necessary to press into service the power companies as the best fitted organizations to carry on the campaign. As a result each power company has taken charge of the campaign in its particular territory. In several districts the local contractors and dealers have joined whole-heartedly in the movement with the appointed chairmen and have assessed themselves for a contribution toward the local expenses.

In Portland, Ore., the campaign is in the hands of a special committee composed of representatives of the two power companies, the jobbers, the dealers and the manufacturers. The progress of the Portland campaign appears on another page of this issue. There probably will not be any campaign in Seattle and Tacoma, Wash., but the Puget Sound Power & Light Company is planning to devote attention to the work in other Puget Sound cities. In Spokane, the chairman has not yet been definitely appointed but it seems likely that the campaign will be conducted there by the Electrical Service League of that city, of which Lewis A. Lewis, sales manager of The Washington Water Power Company, is president.

Herewith are listed the different districts of the territory in which organization has been effected and work started. Other districts may be added to this list as the movement gains momentum.

Denver League Moves Offices.—The Electrical Cooperative League of Denver, Colo., has moved its offices to rooms 404-5 in the Gas & Electric Building in that city.

BETTER HOME LIGHTING CAMPAIGN ORGANIZATION

District	Extent	Chairman	Address
Utah, northern Colorado, southern Idaho.	101 communities in the vicinity of Salt Lake City.	C. Louis Collins,	Rocky Mt. Elec. Develop. League, Salt Lake City.
Southwestern Idaho, northeastern Oregon.	26 communities in vicinity of Boise, Idaho, and Ontario, Ore.	J. F. Orr,	Idaho Pr. Co., Boise.
Northern Idaho.	Sand Point and vicinity.	Lee Bennett,	Mt. States Pr. Co., Sand Point.
Northwestern Montana.	Kalispell and vicinity.	W. B. McDonald,	Mt. States Pr. Co., Kalispell.
Eastern Oregon.	Baker, LaGrand, etc.	E. L. Crockatt,	East. Ore. Lt. & Pr. Co., Baker.
Northern Oregon.	Portland & suburbs and Vancouver, Wash.	Francis H. Murphy,	P.E.P. Co., Portland.
Northern Oregon.	Astoria, Hood River, The Dalles, and Pendleton.	Verne H. Moon, assisted by George T. Bragg,	P. P. & L. Co., Portland.
Willamette Valley, Oregon.	Oregon City and vicinity.	George E. Sullivan,	P.E.P. Co., Oregon City.
Willamette Valley, Oregon.	Salem and vicinity.	W. M. Hamilton,	P.E.P. Co., Salem
Willamette Valley, Oregon.	Albany, Corvallis, etc.	F. D. McKenna	Mt. States Pr. Co., Corvallis
Tualatin Valley, Oregon.	Hillsboro and vicinity.	J. H. Murton,	Puget Sd. Pr. & Lt. Co., Hillsboro.
Southern Oregon, northern California	43 communities in vicinity of Medford, Grants Pass, Klamath Falls, etc.	W. M. Sheppard, assisted by J. J. Buchter,	The Cal. Ore. Pr. Co., Medford
Southwestern Washington	Kalama, Kelso, Chehalis, etc.	C. E. Day,	Puget Sd. Pr. & Lt. Co., Chehalis.
Northwestern Washington.	Everett and vicinity.	A. M. Chittey,	Puget Sd. Pr. & Lt. Co., Everett.
Northwestern Washington.	Arlington, Port Townsend, and vicinity.	R. U. Muffley,	Wash. Coast Utilities Co., Seattle.
Northwestern Washington.	Bremerton and vicinity.	Not named,	North Pacific Pub. Serv. Co., Bremerton.
Eastern Washington.	18 communities in vicinity of Yakima and Walla Walla.	Verne H. Moon, assisted by George T. Bragg,	P. P. & L. Co., Portland.
Northeastern Washington.	Spokane and vicinity.	Not named,	Elec. Service League, Spokane.
Northeastern Washington.	Cheney and vicinity.	B. R. Lean,	Cheney Lt. & Pr. Co., Cheney.

British Columbia Home Lighting Campaign to Open Nov. 15

The Better Home Lighting Campaign is being taken up actively by the entire electrical industry of British Columbia under the direction of E. E. Walker, sales manager, and J. Lightbody, publicity manager of the British Columbia Electric Railway Company, who are the regional directors. A fund of $4,200 has been subscribed for conducting the campaign in Vancouver, Victoria and surrounding territory.

In Vancouver the following have been appointed chairmen of the various committees:

Finance, H. Pim, district manager, Canadian General Electric Company; prizes, J. F. Little, district manager, Northern Electric Company; prize awards, J. R. Reed, district manager, Canadian Westinghouse Company; school boards, E. E. Walker, sales manager, British Columbia Electric Railway Company; dealer cooperation, H. Stephenson; distribution of supplies. J. Priestman, assistant sales manager, British Columbia Electric Railway Company; lectures, W. C. Mainwaring, district sales manager, Northern Electric Company; publicity and advertising, J. Lightbody, publicity manager, British Columbia Electric Railway Company.

The approval of the Vancouver school boards and a number of other school boards in the territory has been obtained for the operating of the contest through the schools. In one case the head of a private school was so interested in the national announcement of the contest that he wrote to headquarters in New York before he heard of the local activity.

The judges of the Vancouver contest will be J. K. MacRae, president, Vancouver Board of Trade; E. S. Robinson, city librarian; and Prof. W. A. Smelzer, University of British Columbia, and a judge of the supreme court.

The Victoria judges will be George Deane, municipal inspector of schools; F. Giolma, journalist, executive, Victoria Publicity Bureau; E. C. Hayward, electrical engineer; and Mrs. H. Hodges, Victoria Daily Times, president, Victoria Woman's Canadian Club.

The British Columbia contest is expected to open on Nov. 15, delay having been occasioned by printing of primers and folders in Canada to avoid United States imprint which might have affected the campaign. All the branches of the electrical industry have been organized and are working hard to make it a success.

Correction Made.—The Economy Fuse & Manufacturing Company has not moved its district offices from Seattle, Wash., to Denver, Colo., as was announced on page 225 of the Sept. 15, 1924, issue of the Journal of Electricity. W. E. Jones continues to be in charge of the Seattle office, which remains the district headquarters. F. L. Easton is in charge of the Denver sales office.

Public Speaking Class Starts Term in Colorado.—The public speaking class for qualified utility employees, sponsored by the Rocky Mountain Committee on Public Utility Information, was opened for its second term in Denver, Colo., Oct. 9. H. H. Argabrite of the Western Electric Company in that city supervises the class.

Home Lighting Campaign Gains Headway in Portland

In the hands of a local committee representing all branches of the electrical industry, the Better Home Lighting Campaign is financed and well under way in the Portland, Ore., district, including the suburbs of the city, Oregon City, and Vancouver, Wash. The sanction of the school board has been obtained, and, through the national advertising, supplemented by advertisements in the local newspapers and broadcasting from the Oregonian radio station, a high degree of interest has been aroused. It is believed that there will be more than 15,000 entries in the essay contest.

In arranging the prizes, the committee accepted the theory that it was fair for boys and girls to compete equally, but that grade school students should not have to compete against high school students. Thus two equal sets of prizes are offered, one set for the entrants from each class of schools. The prizes aggregate $1,710, including one grand prize of $200 to be competed for by all three cities. Besides the grand prize there are in Portland ninety-two other prizes ranging from $150 to $5; in Vancouver, twenty-eight from $50 to $5; and in Oregon City, eighteen from $25 to $5.

The judges selected to choose the winners in the essay contest are: Marshal Dana, associate editor of the Oregon Daily Journal, chairman; J. C. English, lighting expert of the English Company, electrical contractors and dealers; Dr. Horace B. Fenton, eye, ear, nose and throat specialist; E. H. Whitney, assistant superintendent of schools; Judge W. N. Gatens, formerly judge of the circuit court; and Mrs. C. B. Simmons, educator and clubwoman.

The executive council of the Lighting Educational Committee, Portland district, is headed by Francis H. Murphy, illuminating engineer with the Portland Electric Power Company, and is composed of: F. N. Averill, Fobes Supply Company; George Boring, Pacific States Electric Company; J. C. English, English Company; C. M. Higbee, electrical contractor, A. S. Moody, General Electric Company; J. C. Plankinton, Northwestern Electric Company; J. H. Sroufe, Jaggar-Sroufe Company; W. P. Strandborg, Portland Electric Power Company; and Carl L. Wernicke, Westinghouse Electric & Manufacturing Company.

Sub-committees, handling details of the campaign, consist of: school cooperation, J. C. English, chairman, Dr. A. K. Higgs, oculist, and F. H. Murphy; prize awards, J. C. Plankinton, chairman, E. L. Knight, of E. L. Knight & Company, electrical contractors and dealers, E. F. Whitney, General Electric Company, R. W. Turnbull, Edison Electric Appliance Company, L. G. Fear, Westinghouse Electric & Manufacturing Company, and W. R. Bowles, Morrison Electric Company, electrical contractors and dealers; finance, A. S. Moody, chairman, F. N. Averill, George Boring, C. M. Higbee, and R. M. Boykin, Puget Sound Power & Light Company; judges, George Boring, chairman, Sidney Ward, Western Electric Company, and W. W. Wheat, North Coast Electric Company; speakers and distribution of material, Carl L. Wernicke, chairman, assistants not yet appointed.

The organization has procured the services of a secretary in the person of Jay S. Groo, formerly with the Northwestern Electric Company, and has established headquarters in the office of the Journal of Electricity, 1206 Spalding Building, this space having been loaned for the purpose.

British Columbia Company Applies for Water.—The East Kootenay Power Company, Fernie, B. C., which supplies the towns of Fernie and Cranbrook and the Crows Nest Coal Company and the Sullivan mine, besides a number of lumber mills and smaller concerns, is applying to the British Columbia government for a license to take 100 sec.-ft. of water from Line Creek and store it in a reservoir to be constructed by damming the outlet of Grave Lake. This will flood about 100 acres of land and give the reservoir a capacity of 15,000 acre-ft.

Points of Interest Visited by Convention Delegates

As guests of the San Francisco section of the A.I.E.E., members of the party who made the trip to the West to attend the annual Pacific Coast convention of the society were taken to many points of interest in the vicinity of San Francisco. Vaca-Dixon substation of the Pacific Gas and Electric Company, Stanford University and the Hetch Hetchy water project of the City of San Francisco were visited during the time that the party stayed in the city.

The members of the Eastern party who made the trip to the Pasadena convention were:

Mr. and Mrs. J. C. Damon (American Brass Company), Miss Alice Basset, Waterbury, Conn.; Mr. and Mrs. Edgar Kobak (McGraw-Hill Company), James H. McGraw, Jr. (McGraw-Hill Company), L. W. W. Morrow (Electrical World), E. H. Hubert (A.I.E.E.), New York, N. Y.; Dr. and Mrs. J. H. Whitehead (Johns Hopkins University), Baltimore, Md.; Mr. and Mrs. N. S. Amstutz (research engineer and patent attorney), Valparaiso, Ind.; Mr. and Mrs. H. C. Sutton (The United Gas Improvement Company), Mr. and Mrs. C. J. Russell and Miss Dorothy Russell (Philadelphia Electric Company), Philadelphia, Pa.; Mr. and Mrs. J. L. Yardley, K. Yardley and Master Ralph Yardley (Westinghouse Electric & Manufacturing Company), Pittsburgh, Pa.; J. L. Burnham (General Electric Company), Mr. and Mrs. W. J. Foster (General Electric Company), Schenectady, N. Y.; H. E. Bussey (General Electric Company), Atlanta, Ga.; and Mr. and Mrs. J. T. Lawson (Public Service Electric Company), East Orange, N. J.

Edison Company Measures Surges on Transmission Lines

Fifteen Klydonographs have been installed at Laguna Bell, Vestal, Magunden and Big Creek No. 1 stations on the 320-kv. lines of the Southern California Edison Company, for the investigation and measuring of surges.

These instruments are wave meters manufactured by the Westinghouse Electric & Manufacturing Company and make use of the photographic plate for obtaining a picture of the effect of surges or other electrical disturbances taking place on the line. Three instruments at each station are electrostatically coupled to the lines, and measure the magnitude and polarity of a surge, the resultant picture being compared to the calibrated photograph made at the laboratory. One instrument, installed at each station except Big Creek No. 1, is magnetically coupled to the lines by means of the use of a ground wire between towers, as an antenna. This antenna instrument photographs a current which is proportional to the rate of change of current in the transmission line, and indicates the steepness of the wave front and the direction of travel.

Preliminary investigation of the results obtained indicate that the disturbances at each station are proportional in magnitude to the distance away from the source, and that surges indicated at any one station are usually caused by switching at or near that station.

Personnel Committee Meeting Held in San Francisco.—Organization of the personnel committee of the P.C.E.A. was completed at the meeting held in San Francisco, Sept. 19. Discussion of the various phases of personnel and employee welfare work preceded the assignment of responsibility for the studies and papers of the ensuing year. These papers will be presented as finished at future committee meetings. Publication of papers, however, will follow the usual practice of the association. Among the subjects assigned are the following: "Advantages of Employment Department"; "Interviewers' Rating and Tests"; "Employees' Educational Activities"; "Employees' Training"; "Accident Prevention"; "Job Analysis, Comparison and Rating." The next meeting of the committee will be held in Los Angeles, in November.

Members of party making trip to A.I.E.E. Pacific Coast convention assembled at Stanford University where they were entertained by Prof. and Mrs. Harris J. Ryan and Prof. H. H. Henline.

Interest in Electric Ranges Is Stimulated in Northwest

In a recent 45-day campaign conducted over the major portion of the territory served by the Puget Sound Power & Light Company, Seattle, Wash., 803 electric ranges were sold and installed. This campaign, which was carried on in all the towns served by that company west of the Cascade Mountains and north of Olympia, under the direction of H. J. Gille, general sales manager, was the first of its kind undertaken by the company, and was successful beyond expectations.

R. W. Clark, sales manager of the Seattle division, who, with L. R. Grant, assistant sales manager, organized the working details, attributed the success attained to the cooperation received from the employees in all departments of the business. Before the campaign commenced a letter was directed to the employees in Seattle and the other cities and towns in which sales effort was to be applied, seeking their aid in furnishing prospects and making sales, and outlining the basis of extra compensation to be received for such effort, which was five per cent for every range sold and three per cent for every prospect turned in that was sold by a regular salesman. This letter was followed by educational meetings in each division, the one in Seattle being attended by more than 200 employees. During the campaign other employee meetings were held and other communications were sent out, so that interest was sustained to the end, and the net result was that many of the sales were made by employees not in the sales department and to prospects turned in by such employees.

In all divisions quotas were established so that the spirit of competition might be injected into the campaign. Prizes were offered for all divisions reaching quota, and for the divisions making the highest percentage of quota. Individual salesmen also were given quotas based on the territory allotted to them, and prizes were offered in this department so that each could contest against the others on an equitable basis.

Individual sales effort was supplemented by newspaper advertising and by banners on the company automobiles proclaiming the feature of the campaign, which was the moderate down payment of $10 with the balance on easy terms. Cooking schools and demonstrations, conducted by experts from the Edison Electric Appliance Company in the main cities of all divisions, proved to be popular with the public, and many sales were traced to this activity.

H. J. Gille, in commenting on the results obtained, stated that apparently there is a strong desire among a great many women to cook electrically, and that the principal point to be stressed is that the operating cost is not excessive.

Interest in electrical cooking has also been fostered recently by the Edison Electric Appliance Company working in conjunction with the Anaconda Standard, one of the leading newspapers of Butte, Mont. Under the auspices of the newspaper a three-day cooking school was held in Butte and during this time Mrs. Alan E. Hunt, home economist of the Edison company, demonstrated the value of the electric range. The average attendance during the period of the school was 300 and on the last day, when the baking contest entries were accepted, 400 women were in attendance.

One of the advertisements used by the Puget Sound Power & Light Company in its range campaign.

New Type of Automatic Control for Electric Ranges

A new type of time and temperature control has been produced by A. J. Lindemann & Hoverson Company, Milwaukee, Wis., manufacturers of the L. & H. Electrics line of electric ranges and appliances. The device will be built into future automatic models of the company and ranges not originally equipped with the automatic control may be so equipped at a later date if it is desired.

The control is composed of a clock device and a mercury column. By means of a clock dial the apparatus may be set for turning on the current in the oven at any predetermined time and for maintaining any desired temperature for any period up to twelve hours. It is not necessary to wind the clock as the setting operation performs this duty. A small red signal lamp with jewel lens in the switch panel indicates when the current is turned on in the oven.

Books and Bulletins

PRINCIPLES OF BUSINESS WRITING

By T. H. BAILEY WHIPPLE. $2. Published by Westinghouse Technical Night School Press, East Pittsburgh, Pa.

The author of this useful book is "literary critic" for the Westinghouse Electric & Manufacturing Company, that is to say, he edits and revises the writings of the gentlemen on the staff of that important industrial corporation. In a circular, quoted in the preface, he asserts: "It is no exaggeration to say that the most universal deficiency in our organization is flabby and incorrect expression. This fault is individual, but the organization suffers. The cost is paid in dollars, the total of which is impossible of accurate estimate, because the loss is both tangible and intangible." He proceeds to show how this unfortunate result is produced. He has set himself to correct it by writing on the subject and giving advice the sincerity of which is manifest.

With his work I feel in keen sympathy, of course; because I realize, as he does, the waste of time, money, and patience that follows from sloppy writing whether in business or philosophy. For example, that excellent book "The Mind in the Making" could be improved 25 per cent if the author of it had taken pains to study the technique of writing before he undertook to expound a difficult subject. Let me quote Mr. Whipple again: "Why do shrewd, conservative, sagacious, calculating, dollar-loving business men—the level-headed element of any community—commit their message of trade-building to correspondents whom they know to be too inferior in education and native ability to be entrusted to perform many other business functions?" We may question whether the business man is the obvious type of level-headedness on matters outside his immediate cognizance, but Mr. Whipple's point nevertheless is well taken. It is fair to ask why do newspapers and magazines accept as journalists men without literary qualifications. The answer to these questions is that most people, especially the half-educated business man, has no idea of the value of correct expression, and therefore remains largely inarticulate. As the first sentence in the preface of Mr. Whipple's book says, "the writer of a business letter has in view the favorable effect of the letter upon his correspondent"; in my own little book on the subject I repeat several times the injunction "Remember the reader." Writing is a two-sided, not a one-sided, affair; its purpose is to transfer ideas from one man to another; and the success of the effort depends largely upon the medium of expression; upon bringing two minds into effective contact.

The scope of Mr. Whipple's book is indicated by the headings of some of his chapters, such as "Technique and Methods," "Words and Phrases Often Misused," "Typical Reports," "Typical Letter-writing Problems," "Questions and Answers on Business Writing." The book includes the admirable brochure on "Suggestions to Authors of Technical Papers" by George McLane Wood, editor to the U. S. Geological Survey; of the three other articles quoted by the author, only one, that by F. H. Norton, is worthy of note.

The book is published by the Westinghouse Technical Night School Press, at East Pittsburgh, Pa. It is not surprising that an organization so successful as that of the Westinghouse corporation should exhibit the good sense to maintain a night school and the sagacity to retain on its staff an editor competent to revise its publications, assist its managers, and instruct its stenographers. May the good work continue!

T. A. RICKARD.

Meetings

Technical Section Bureaus Hold First Conclave Meeting

All bureaus of the Technical Section of the P.C.E.A. held meetings in Los Angeles, Calif., Sept. 17-19, and at that time organization of the work of the bureaus was completed. Topics for the year's study were discussed by each bureau and a general outline of the procedure to be followed was adopted.

At the meeting of the Technical Executive Committee, held in the Byrne Building, P. O. Crawford, chairman of the section and the chairmen of the nine bureaus outlined the year's programs for their own committees. The programs met with the approval of the executive committee and it was suggested that they could be co-ordinated with the program of the Technical National Section at the first group meeting to be held in St. Louis, Mo., Oct. 20-23. The committee decided that the bureau chairmen, section chairman and vice-chairman should attend the national group meetings. R. M. Peabody, W. H. Talbott, C. E. Steinbeck and J. C. Gaylord will represent the Technical Section at the St. Louis meeting.

The accident prevention bureau, J. M. Buswell, chairman, at its meeting, prepared a recommendation to the executive committee to the effect that the bureau be given the problems covered by the fire prevention sub-committee. The bureau also discussed the use of uniform accident statistics charts and decided that charts and reports should be exchanged during the year with the view to later considering the adoption of uniform systems. Papers to be handled by the bureau members were discussed and assigned to individuals who will prepare them and have outlines ready to be presented at the January meeting.

The tentative outlining of the subjects for the year's study occupied the time of the meeting held by the inductive co-ordination bureau which was presided over by L. J. Corbett, chairman.

R. M. Peabody, chairman of the hydraulic power bureau, at the meeting of the bureau outlined correspondence with R. L. Hearn, chairman of the national hydraulic power committee, in which Mr. Hearn asked that if no subject had been selected, the bureau cooperate with the national committee on the subject of "Dams." The chairman announced that since the bureau had chosen the subject "Hydroelectric Plant Layout" and personnel had been selected with that subject in view, it was preferable to postpone the proposal and ask that the national committee handle the subject. Members of the committee suggested that the work on "Dams" could be undertaken by a separate subcommittee, arrangements being made that there should be no duplication of the work proposed by the arch dam committee of the Engineering Foundation. The two subjects carried over from last year's work—"Discharge Coefficients Through Large Rectangular Openings" and "Investigation of Silt Deposits in Canals, Flumes and Settling Basins"—will be placed in the hands of a separate committee for continuation. The bureau decided to limit the work on the year's report to the subject of plant layout, including only such details of apparatus as have direct effect on the arrangement of the plant. Details of turbines and impulse wheels will not be considered. The method of dividing the work between the apparatus bureau and the hydraulic power bureau will be left to each subcommittee. An outline of the work of the bureau will be sent to the members in the near future.

C. E. Steinbeck, chairman of the prime movers bureau, presented to the members of that bureau suggestions to the effect that the bureau should spend considerable time in obtaining data relative to the operating experience of steam plants in the district covered by the P.C.E.A. A list covering data to be secured from the various plants was presented and revised and will be followed by the bureau in making its report. The data will be requested on only relatively modern equipment. Various discussions concerning operating conditions occupied the remainder of the meeting.

Six subjects were discussed by the underground systems bureau, C. H. Jenkins, chairman. The subjects were as follows: "Duct Line Temperature Data"; "Conductors: Sizes and Thickness of Insulation"; "Recent Practice in Manhole and Conduit Construction, Junction Boxes and Terminals"; "High Voltage Cables—35 kv. or Higher"; "Less Expensive Underground Construction for Residence Territory Using Armored Cable with or without Lead"; and "Three-Phase Secondary Networks." Each subject was later referred to a special sub-committee for further investigation. The revision of the Underground Systems section of the National Electrical Code was brought up for discussion and the consensus of opinion was that the matter should be given considerable thought with regard to its relation to the existing California law.

Eight subjects were discussed at the three sessions held by the meter bureau under the direction of G. H. Searle, chairman. The subjects discussed were as follows: "Education of Meter Men"; "Use of Oil in Meter Bearings"; "Maintenance of Relays"; "High Tension Metering for Operating Conditions"; "Proper Size Meters for Various Installations"; "Ironclad Installations Relative to Meter Testing"; "New Developments"; and "Test Periods." Chairmen to supervise the securing of further data on the subjects were appointed for the first seven topics. The chairman of the bureau will give the eighth topic his attention.

Topics to be covered by the safety rules bureau, W. H. Talbott, chairman, were announced at the meeting of that bureau. Sub-committees to investigate and report on these will be appointed in the near future. It was the opinion of the bureau that a copy of the present revised Safety Orders of the Industrial Accident Commission of California should be secured in order that the members might read them over and offer objections to the provisions before they come up for public hearing. An effort will be made to obtain a typewritten copy of the orders before the printing is done. The bureau favored the tying-in of work with the City Inspectors' Association and recommended that a member of each company be present at the association meetings.

COMING EVENTS

American Institute of Electrical Engineers—
Pacific Coast Convention—Pasadena, Calif.
Oct. 13-18, 1924

Illuminating Engineering Society—
Annual Convention—Briarcliff Lodge, Briarcliff Manor, N. Y.
Oct. 27-31, 1924

Commercial National Section, National Electric Light Association—
Hotel Rafael, San Rafael, Calif.
Nov. 19-21, 1924

COMING PACIFIC COAST ELECTRICAL ASSOCIATION MEETINGS

Executive Committee, Commercial Section—
Los Angeles, Calif.
Oct. 17-18, 1924

Appliance Bureau—Commercial Section—
Los Angeles, Calif.
Oct. 17-18, 1924

Customer Relations Bureau, Commercial Section—
Los Angeles, Calif.
Oct. 17-18, 1924

Electric Cooking and Heating Bureau, Commercial Section—
Los Angeles, Calif.
Oct. 17-18, 1924

Lighting Bureau, Commercial Section—
Los Angeles, Calif.
Oct. 17-18, 1924

Power Bureau, Commercial Section—
Los Angeles, Calif.
Oct. 17-18, 1924

Transportation Bureau—Commercial Section—
Los Angeles, Calif.
Oct. 17-18, 1924

Commercial Section—
San Francisco, Calif.
Nov. 19-21, 1924

Purchasing and Stores Section—
Del Monte, Calif.
Nov. 20-21, 1924

P.C.E.A. Commercial Section to Meet in Los Angeles.—The executive committee of the Commercial Section of the P.C.E.A. and the six bureaus of that section will hold conclave meetings in Los Angeles, Calif., Oct. 17-18. The meetings will be held in the club rooms of the Southern California Edison Company, Edison Building. The next meeting of the section has been scheduled for Nov. 19-21, and will be held in San Francisco in connection with the meeting of the Commercial National Section of the National Electric Light Association. This will also be a conclave meeting of the entire Commercial Section.

Portland A.I.E.E. Meets.—At a meeting on Sept. 24 of the Portland section of the American Institute of Electrical Engineers, C. P. Osborne, superintendent of light and power, Portland Electric Power Company, told of some of the events of the World Power Conference at London, from which he recently returned. F. H. Murphy, illuminating engineer, Portland Electric Power Company, gave a report on the annual convention of the A. I. E. E. in June at Edgewater Beach, Chicago.

Manufacturer, Dealer and Jobber Activities

Hope Webbing Company, Providence, R. I., has recently put on the market a new type of radio antenna known as Talking Tape. The new product is designed for use indoors with either tube or crystal receivers. Talking Tape is a woven combination of metallic and fiber strands with the metallic portion in parallel lines of even spacement. The textile feature protects the strands against wear and at the same time gives maximum flexibility. Because of the flexibility the antenna may be adapted to any space, being particularly suitable to stringing under tables, around the room behind mouldings, etc. The product may also be used to good advantage in various sized frames in which the tape is laced. The antenna is made in rolls of 100 ft. and is moderately priced.

The Johnson Washer Company, Oakland, Calif., has completed remodeling and rearranging its factory in that city. The company was started in 1903, in San Francisco and was incorporated in 1911. In 1921 the factory was moved to Oakland. Recent increase in demand for the factory's impeller washer has necessitated the enlargement and remodeling of the manufacturing facilities and this has now been completed. The company made some changes in its product, especially since the new management took charge, under the direction of F. B. Schuyler, president and general manager, A. W. Sterling, vice-president, and G. B. Schuyler, treasurer and sales manager. The company now makes four models of electric washer, one of which is equipped with sliding wringer, which is said to be the only machine of its type now manufactured. The Johnson washer is said to be the first ever made with a water heater built in as part of the equipment. The electrical unit is a Wagner motor. G. W. Rethschult, formerly with the Gillespie-Eden Corporation, has been appointed southern representative for the factory and will have headquarters at Los Angeles.

The Globe Electric Supply Company of Denver, Colo., has been designated as distributor in the Mountain region of SerV-el refrigerating equipment. Thomas M. Knight, formerly a technical executive of the Dupont company, has been placed in charge of the new department established by the Globe company.

The Ivanhoe Division of the Miller Company has established representation in the Rocky Mountain territory with semi-permanent headquarters in Denver, Colo., for R. H. Zeller, who has been covering the territory for the past year.

The Terry Steam Turbine Company announces the appointment of C. S. Henderson as district representative. Mr. Henderson's office is in the Call Building, San Francisco, Calif.

The Trumbull Electric Company, Plainville, Conn., has brought out a new switch of the quick break type. All live parts immediately become dead upon opening the cover and the fuse block is reversible.

Smile!

Two contests are being conducted by the Courteous Service Club Committee of the Pacific Coast Electrical Association. Fifty dollars in cash is to be distributed among the prize winners in these two contests which have just started.

Here are the two contests:

Contest I

Twenty-five dollars in prizes to be awarded for the best slogan, of not over ten words, for use by the Courteous Service Club during 1925. The first prize winner will receive ten dollars; the second, five dollars; and the third to sixth inclusive will each be awarded two dollars and fifty cents.

Contest II

For the best true story of not over two hundred (200) words in length illustrating the application of courtesy by an employee, the Courteous Service Club Committee of the Pacific Coast Electrical Association will award a first prize of ten dollars. A second prize of five dollars will be given for the second best story and the persons who submit the stories which shall be adjudged to rank from third to sixth best will each receive two dollars and fifty cents.

Anyone, except the members of the Courteous Service Club Committee and their immediate families, shall be eligible for participation in the contest.

The names of the winners, together with the winning contributions, will be presented in the Jan. 1, 1925, issue of the Journal of Electricity. Enter the contests now by sending your entry to Courteous Service Club, c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.

Contest Rules

The rules for the two contests are the same and are as follows:

1. The contest is open to anyone except members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and their immediate families.
2. In Contest I the slogans submitted must be of ten words or less. In Contest II stories must be true and of two hundred words or less in length.
3. The judges will be the members of the Courteous Service Club Committee of the Pacific Coast Electrical Association and are as follows:

R. A. Balzari, Westinghouse Electric & Manufacturing Company; Victor Hartley, California Electrical Cooperative Campaign; M. S. Barnes, General Electric Company; G. C. Tenney, Journal of Electricity; H. L. Bronley, The California Oregon Power Company; O. S. Clifford, Truckee River Power Company; S. W. Green, San Joaquin Light & Power Corporation; E. G. McCann, Pacific Gas and Electric Company; Lloyd H. Hardy, Great Western Power Company; R. E. Smith, California Electrical Cooperative Campaign; Wm. Cyr, San Diego Consolidated Gas & Electric Company; E. B. Cummings, Southern California Edison Company; R. E. Bacon, Southern California Edison Company; W. A. Knost, Electric Club, Los Angeles; D. L. Scott, Los Angeles Gas & Electric Corporation.

4. Prizes to be awarded separately in each contest are as follows: First prize, ten dollars ($10); second prize, five dollars ($5); third to sixth prizes, inclusive, two dollars and fifty cents ($2.50) each.
5. In case of tie the full amount of the prize will be awarded to all of the tying contestants.
6. Entries are to be sent to Courteous Service Club c/o Journal of Electricity, 883 Mission Street, San Francisco, Calif.
7. Entries must be received before midnight of December 1, 1924.
8. Prizes will be announced in the Jan. 1, 1925, issue of the Journal of Electricity and the winning contributions will be published in that issue.
9. No entries will be returned to contestants and the right of the Courteous Service Club to use slogans and stories shall be conceded upon filing of entry.

The Standard Electric Stove Company, Toledo, Ohio, announces the appointment of F. L. Green Company, Seattle, Wash., as distributors for the Standard line of electric ranges in the Northwest.

The P. A. Geier Company, Cleveland, Ohio, has just completed additions to its plant and the company now is in position to handle increased volume of its product, Royal vacuum cleaners.

The Harvard Electric & Gift Shop, formerly located at 2155 West Sixteenth Street, Los Angeles, has moved to Baldwin Park, Calif., where a location has been secured in a new building on El Monte Boulevard.

The Cullman Wheel Company, Chicago, Ill., has recently produced a low speed drive which may be adapted to churns, washing machines, grindstones, etc., as well as to farm pumps.

Personals

C. E. Skinner, assistant director of engineering of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., is visiting the Pacific

C. E. SKINNER

Coast offices of the company. Mr. Skinner was born on a farm near Redfield, Ohio, May 30, 1865, and was graduated with the class of 1890 from Ohio State University. Shortly after graduation he joined the Westinghouse organization as a machinist, in charge of the controller department, and supervised the construction of the first controllers turned out by his company. Early in 1891 he undertook the development of a system for the testing of insulation, and he had direct charge of all insulation testing. Later for a period of about ten years he had charge of all insulation specification work. Mr. Skinner's duties as assistant director of engineering, to which position he was appointed early in 1922, include research, standards and other work long these lines. He is known throughout the electrical world for his extensive research work, especially on insulation, and his efforts in this direction have had a marked effect on the development of electrical machine design. Mr. Skinner is a member of the Franklin Institute, the American Society for Testing Materials, the American Society of Mechanical Engineers, Fellow of the American Institute of Electrical Engineers, member of the Electric Power Club and of the Engineers' Club of New York.

Ray Murphy, Pacific Coast manager, **Paul I. Prietsch**, in charge of the miniature lamp department, and **C. E. Thompson**, merchandising expert, of the Westinghouse Lamp Company, San Francisco, Calif., were recent Los Angeles visitors.

C. W. Arthur, formerly connected with the Interstate Electric Company, New Orleans, La., has recently joined the Graham-Reynolds Electric Company, Los Angeles, Calif., and will be in charge of the recently organized radio department of that institution. Mr. Arthur was formerly in charge of the radio department of the Interstate Electric Company.

Charles W. Cross, president of the Ogden, Utah, chapter of the American Association of Engineers, and **M. D. Williams**, a past president of the chapter, have been appointed to committee memberships by the national organization. Mr. Cross was named a member of the committee on individual merit, and Mr. Williams holds a position on the committee on chapter activities.

Waldo E. Enns, a graduate in electrical engineering from the University of California, 1924, has been appointed assistant sales engineer for Clayton E. Ingalls, San Francisco, Calif.

Clayton E. Ingalls, representative of several Eastern manufacturers, has just returned from an extensive trip East during which he visited the various factories whose lines he represents.

A. D. Page, manager, **George Osborne**, assistant sales manager, and **J. W. McIvor**, manager of the publicity department of the Edison Lamp Works, Harrison, N. J., are visiting the Pacific Coast. They have already spent some time in California and will make their return through the Northwest.

Dean D. Clark, commercial manager of the Mountain States Telephone & Telegraph Company in Denver, Colo., and treasurer of the Electrical Cooperative League of that city, is making a tour of the Northwest in the interests of his company.

C. C. Fredericks, vice-president and general manager, and **J. R. Kearney**, vice-president in charge of electrical sales of the W. N. Matthews Corporation, St. Louis, Mo., and **Ben C. Holst**, California representative for the company, have just finished a tour of inspection in California. Mr. Fredericks and Mr. Kearney also visited various cities in the Rocky Mountain territory.

Ben C. Holst, California representative for the W. N. Matthews Corporation, St. Louis, Mo., has moved to larger quarters at 301 Rialto Building, San Francisco, Calif.

Robert S. Miller, manager of the Salt Lake City, Utah, district of the General Electric Company, has been made acting manager of the Denver, Colo., office of the company pending the return of Harry Randall. Mr. Miller will divide his time between the two districts until Mr. Randall's return.

Matt Whitney, of the Whitney Electric Company, Colorado Springs, Colo., has organized the contractor-dealers of that city to handle the Better Lighting Contest in that territory.

J. C. Davidson, of the Hendrie & Bolthoff Manufacturing & Supply Company, Denver, Colo., heads a committee charged with the responsibility of investigating and deciding on the possibilities of a combined radio and electrical show to be held in that city early next year under the auspices of the local electrical league and radio distributors.

L. T. Merwin, of the Northwest Electric Company, Portland, Ore., was recently in San Francisco, Calif., on business for his company.

O. B. Stubbs, of the Stubbs Electric Company, Portland, Ore., attended the recent convention of the Electrical Supply Jobbers Association held at Del Monte, Calif.

P. J. Aaron, manager of Fobes Supply Company, Seattle, Wash., attended the convention of the Electrical Supply Jobbers Association, held at Del Monte, Calif., Sept. 26-28, 1924.

Harry W. Lippert, for the past four years Pacific Coast representative of the Estate Stove Company, Hamilton, Ohio, has resigned to become affiliated with the field sales force of A. J. Lindemann & Hoverson Company, Milwaukee, Wis. Mr. Lippert will cover the territory from Salt Lake City, Utah, to the Coast. His headquarters will be at Room 245 Rialto Bldg., San Francisco, Calif.

H. C. Van Buskirk, of the Southern Sierras Power Company, Riverside, Calif., was a recent visitor to San Francisco.

F. S. Mills, Pacific Coast sales manager of Curtis Lighting, Inc., Chicago, Ill., has just returned from the factory at Chicago. During his eastern trip Mr. Mills also visited Milwaukee, Wis., Cleveland, Ohio, Pittsburg, Pa., and New York City. At the request of the Allied Architects of Los Angeles, Calif., he investigated the lighting of art museums preparatory to making suggestions for the illumination of the new $10,000,000 museum to be built at Los Angeles.

C. D. Monteith has just been appointed transportation engineer of the electric truck bureau of the Pacific Gas and Electric Company, San Francisco, Calif. Mr. Monteith was graduated in electrical engineering from Cornell University in 1922 and shortly thereafter became connected with the Northwest Electric Company at Portland, Ore. During his connection with this company he filled the positions of assistant to the superintendent of transmission line construction and, later, assistant superintendent of operation. Leaving the Northwest Electric Compay, Mr. Monteith became commercial manager of the Missoula Light & Water Company, Missoula, Mont., which position he resigned to enter the army. As captain in the Signal Corps he was instructor in the army signal schools with the A. E. F. Upon his return to the United States he became commercial superintendent of the H. M. Byllesby & Company properties at Ottumwa, Iowa. Following this Mr. Monteith for several years conducted an engineering-con-

C. D. MONTEITH

tracting business at Phoenix, Ariz., which business he finally gave up to re-enter the utility field. Prior to his appointment as transportation engineer Mr. Monteith was connected with the San Joaquin division of the company and was stationed at Modesto, Calif.

T. E. Bibbins, president of the Pacific States Electric Company, San Francisco, Calif., is making an extended trip to eastern cities. Mr. Bibbins will spend some time in New York City, Schenectady, and other manufacturing centers.

E. Ward Wilkins, president of Partrick-Wilkins Company, Philadelphia, Pa., will visit the Pacific Coast in the near future, visiting all of his jobbing connections. Mr. Wilkins was one of the founders and an early vice-president of the Electrical Supply Jobbers Association.

Ernest R. Woolley has been elected president of the newly organized Nathaniel Baldwin Sales Company, Salt Lake City, Utah. The company distributes radio material in the Intermountain territory.

W. A. Brackenridge, vice-president of the Southern California Edison Company, Los Angeles, Calif., was recently in San Francisco on business for the company.

Lewis A. Lewis, sales manager of the Washington Water Power Company, Spokane, Wash., has been elected president of the Electrical Service League of that city.

Louis R. Lee, chief engineer of the E. W. Clark Engineering Corporation, Cleveland, Ohio, was in Portland, Ore., two weeks in September conferring with the officials of the Portland Electric Power Company on next year's construction program.

George L. Myers, assistant to the president, **C. H. Gueffroy**, secretary to the president, and **C. W. Platt**, secretary and treasurer, Pacific Power & Light Company, Portland, Ore., attended the annual convention of the Pacific Coast Gas Association at Santa Barbara, Calif., Sept. 15 to 19. These men are also officials of the Portland Gas & Coke Company.

Norman Read, vice-president and general manager of the Colorado Power Company until its consolidation with the Public Service Company of Colorado, has resigned from the service of the latter company to become associated with the Electric Bond & Share

NORMAN READ

Company with headquarters in New York City. In his capacity as president of the Rocky Mountain division of the National Electric Light Association Mr. Read will be succeeded by Charles A. Semrad, commercial manager of the Public Service Company of Colorado.

E. J. Power, for the past two years in the sales department of the San Francisco division of the Pacific Gas and Electric Company, has resigned to enter business for himself. Mr. Power will be located in Oakland, Calif., and will specialize in electric heating equipment.

S. H. Taylor, secretary of the Pacific Coast Electrical Association, has returned from an extensive trip to the East. Mr. Taylor attended Camp Co-operation IV, held at Association Island, N. Y., and also visited his boyhood home at Northampton, Mass.

O. B. Coldwell, vice-president and general manager of the Portland Electric Power Company, Portland, Ore., and **H. A. Rands**, project engineer on the Oak Grove development of that company, recently returned from a two weeks' trip along the Sky Line Trail in central Oregon.

Philip Apfel, president of the Electric Heating & Manufacturing Company, Seattle, Wash., has been elected vice-president of the Electric Club of Seattle. **Fred Lushington**, of the Lushington Electric Company, was elected treasurer and **P. L. Hoadley** was named secretary.

Ray W. Turnbull, assistant Pacific Coast manager of the Edison Electric Appliance Company, Portland, Ore., left on Oct. 1 for Honolulu on business for his company. He will return about the middle of November.

Frank J. Thompson has been appointed appliance salesman for the Great Western Power Company, San Francisco division of the company, specializing on domestic equipment.

T. E. Fitzsimmons, formerly representative of the Westinghouse Lamp Company in the Mountain territory, has been transferred to the Los Angeles, Calif., office of that company.

E. A. Scott, Denver, Colo., electragist, is serving temporarily as secretary of the Denver Electrical Contractors' Association. Mr. Scott is also honorary secretary of the Denver Electrical Co-operative League.

Harry J. Martin, Northwest representative of the National Carbon Company, San Francisco, Calif., has been re-elected president of the Electric Club of Seattle, Wash.

L. M. McGinnis, formerly with Scott Plumbing and Electrical Company, Sacramento, Calif., has joined the staff of the Sterling Electrical Company of that city.

Elmer B. Read of the Illinois Electric Company, Los Angeles, Calif., has recently been made manager of the radio department of that organization. Mr. Read succeeds Roy C. Saddler, resigned, who is now connected with the industrial department, Los Angles office, Westinghouse Electric & Manufacturing Company.

G. L. Thomas, formerly representative of the Radio Corporation of America in the Pacific Northwest, has recently succeeded A. B. C. Scull as manager of the Los Angeles, Calif., branch of the Radio Corporation of America. Mr. Scull is now in charge of the Radio Corporation of America's activities in San Francisco and the Pacific Northwest.

J. H. Kelly, J. J. Hayes, C. G. Zokelt, W. M. Meacham and **R. T. Reid** were elected directors of the Electric Club of Seattle at the annual election held recently.

C. E. Grunsky, president of the American Society of Civil Engineers and president of the Pacific Division of the American Association for the Advancement of Science, has received from the Renssalaer Polytechnic Institute of Troy, N. Y., the honorary degree of Doctor of Engineering. This honor was conferred at the celebration of the one hundredth anniversary of the founding of the Institute, held Oct. 3 and 4. Mr. Grunsky, whose work for

C. E. GRUNSKY

the past few years has been of a consulting nature, with headquarters in San Francisco, Calif., was a member of the first Panama Canal Commission. During the administration of President Taft he served as consulting engineer to the Secretary of the Interior. Mr. Grunsky is also president of the California Academy of Sciences at San Francisco.

W. A. J. Guscott, vice-chairman of the Denver Electrical Cooperative League, has been made acting chairman pending the return of chairman Harry Randall.

Obituary

Charles Edwards Downton, who for nearly thirty years has been prominently identified with the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., died suddenly Sept. 28. Mr. Downton was a graduate of Purdue University in electrical engineering, with the degree of Bachelor of Science. He entered the employ of the Westinghouse company as a student apprentice. In 1896 he was placed in charge of the dynamo testing department, and in 1902 he became identified with the educational department, being placed in charge of the training courses for graduate students. When the Westinghouse company entered into the manufacture of munitions Mr. Downton was transferred to the New England Westinghouse Company at Springfield, Mass., where he remained until after the close of the war. Early in 1923 he returned to the main plant of the company at East Pittsburgh, where he has been identified with large electrification projects. Mr. Downton was born in Covington, Ky.

Trade Outlook

San Francisco

The general tone in business circles continues to be optimistic. Fall and winter buying, particularly from the country districts, has strengthened and greater improvement is looked for as the season advances. Reports from the retail and jobbing trades indicate that their sales volumes are about on a par with the same period last year.

Activity in building, both residential and business, continues unabated, and there is a steady demand for structural steel. A good volume is also reported in cement sales. In general, collections are fair, though still backward in some lines, due probably to delay in returns from crops.

Improvement in the electrical industry, as a whole, is evident. Radio sales are particularly good. There is considerable activity in wholesale appliance buying, and jobbers are making shipments now for Christmas stocks. The activity in residence construction naturally reacts favorably on the sales volume of lighting fixtures and household appliances. Collections are reported fair.

The activity of the lumber mills in the Northwest has added to the movement of lumber ships, and the shipment of canned products through this port continues. The number of new enterprises starting in this district is encouraging evidence of business expansion.

Los Angeles

Considerable improvement was noted in all electrical lines during the month of September. The volume of retail sales gained considerably in September over previous months, and the wholesale and supply end of the business showed increased activity. Radio sales continue active, with an increase expected on account of the coming of winter. In other lines of business a cheerful tone is noticeable, many wholesale lines reporting a gradual strengthening in buying, both for immediate and future needs. A generally satisfactory volume of business is being done by department stores and other retail concerns. In both retail and wholesale trades collections are quoted as fair to good. Labor is plentiful.

Spokane

Mining conditions throughout the Inland Empire and in British Columbia continue exceptionally good. Practically all of the larger companies in the Coeur d'Alenes have announced substantial dividend payments for the current quarter, and there is a strong feeling that this industry will continue in good shape for some time to come.

The fruit growers in the Spokane Valley and other districts are now harvesting crops, with yield higher than was anticipated, and good prices.

Flour mills are working at good output, slightly higher than last year, due largely to heavy orders from outside the territory. The six local packing plants continue their high rate of production, with slight decrease in prices for live stock noted.

Local building activities are pronounced, with a number of fairly large buildings and many homes about to be constructed. Real estate prices are very low, with a buyer's market.

Local woodworking plants are working at a good output, with a tendency to increase production. One new cut-up plant is about to be built and several concerns are about to make additions and improvements. Retail business is rather quiet, with considerable improvement expected after election.

Salt Lake City

While there has been no decided change in business conditions in the Intermountain section during the past few weeks, the tendency continues upward. Several important factors are contributing to increased industrial activity. Sugar factories are starting on their fall campaigns in the production of beet sugar, with the outlook favorable for a large output, and furnishing temporary employment to a large number of people. Several millions of dollars will be distributed by these institutions among the farmers for their beets.

Production from leading camps of the state warrants the prediction that Utah's silver output for 1924 will be very near the record figures established for 1923. Because of the excellent demand also for lead, silver-lead mines are maintaining production at a maximum in order to reap full benefit of the strong prices for these metals.

The outstanding feature in the activities of the electrical industry during the past month was the remarkable record established by the Utah Power & Light Company in the sale of kitchen lighting units. During its campaign, which covered the month of September, this company sold more than 11,000 of these units.

Denver

Business conditions in the Rocky Mountain region continue generally satisfactory although certain portions of Wyoming and a large part of New Mexico are suffering from financial failures. Colorado still continues unscathed and the month of October holds out additional satisfactory prospects for two specific reasons—first, the initial payments on the 1924 sugar beet harvest and, second, the building of an oil refinery in Fort Collins, the first to be constructed in the northern Colorado fields. Every day sees increased oil activity of a legitimate nature.

There has been no change in building activities. Denver leads the region, permits for September totaling $3,002,150 with 883 permits. New residence construction established another record during the past month. Even with this gross volume of business, however, nearly every line active in any part of the construction reports a decrease in net profits, indicating that competition is exceedingly keen and that estimates are inadequate.

Jobbers report increased buying from central stations, especially in appliance lines. The movement of construction material is normal. Radio is coming into its own again and with the prospects of KOA, the new broadcasting station in Denver, being on the air by December, higher priced sets are selling more readily.

Portland

Business in Portland and vicinity is gaining, with prospects for still further improvement. The weather, in the main, continues favorable for outdoor construction work, and a great deal of it is going on.

Central stations are carrying about 12 per cent more load than they did a year ago. This increase holds closely in all classes of industry with the best showing, other than in lumber, in manufacturing.

Lumber production is heavy and is expected to remain so for at least three months. The backbone of the present demand lies in the agricultural district, and heavy buying is expected to continue as long as the prices of farm products remain at their present basis. Prices have improved greatly since the summer slump, and mills are again doing a profitable business.

The movement of apples from the surrounding territory increased steadily during the last two weeks of September and is expected to continue heavy throughout the present month. The demand for Northwest apples continues good and prices are firm. The steady rise in the price of wheat is having its effect on the buying in agricultural districts.

Seattle

An increase in the demand for radio sets and equipment, also for lamps for both residence and industrial lighting, feature the Seattle electrical sales volume, with prospect that this condition will maintain for two months more. Sales of domestic appliances, particularly washing machines, ranges and percolators, are better at this time than during the year, with stocks good and deliveries coming through regularly. Housewiring devices and schedule material are moving about the same as heretofore, and the expected heavy demand for hydroelectric equipment has not materialized to any extent. Inquiries are coming in on farm lighting equipment, and this demand is expected to be greatly stimulated by the exhibits at the Western Washington Fair at Puyallup held the first week in October, and to gain in strength after harvest time. Price increases approximating 10 per cent, are noted in outlet boxes and covers, other prices holding steady.

Building construction continues unexpectedly active in Seattle due to seasonable weather prevailing.

Lumber sales continue to exceed mill production, and both domestic and export markets are showing a satisfactory demand. The fact that since the market began to revive last July there has been no overproduction is one of the most encouraging features of the lumber situation.